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TRANSACTIONS

OF THE

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TWENTY-EIGHTH ANNUAL MEETING

OF THE

OHIO STATE MEDICAL SOCIETY,

HELD AT

COLUMBUS, JUNE 10, 11, and 12, 1873.

Dr Gustav C. E. Weber,

DAYTON, OHIO.
UNITED BRETHREN PUBLISHING HOUSE.
1873.

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TWENTY-EIGHTH ANNUAL MEETING

OF THE

Ohio State Medical Society,

HELD IN

Columbus, June 10th, 11th, and 12th, 1873.

FIRST DAY.

MORNING SESSION.

The Society met in the City Council Chamber at 11 o'clock and was called to order by Dr. W. W. Dawson, who introduced the President elect, Dr. A. B. Jones, of Portsmouth.

Rev. Mr. Grover, of the M. E. Church, opened the session with prayer.

Vice-Presidents Drs. A. Blymer, J. B. Hough, and W. J. Anderson, took seats with the President.

Secretary Dr. W. J. Conklin was present.

On motion of Dr. Sinnet, the reading of the minutes of the last annual meeting was dispensed with.

Dr. Gay, chairman of the Executive Committee, made the following report:

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Your Committee have secured this Council Chamber for the use of the Society. We suggest that the meetings be held at 9:00 A. M. and 2:00 P. M., daily; that the election of officers be held at 11:00 A. M., and the President's Address be delivered at 2:00 P. M., on Wednesday.

Tickets to a Microscopical and Electroscopical entertainment, directed by Prof. Wormley, will be furnished by the Assistant Secretary, for Tuesday evening at 8 o'clock. There will be an entertainment at the Deaf and Dumb Asylum on Wednesday evening at 8 o'clock.

NORMAN GAY, *Chairman.*

In the absence of the Treasurer, Dr. J. B. Thompson was appointed Treasurer *pro tem.*

The vacancies in the Committee on Admissions were filled by the appointment of Drs. C. P. Landon, T. J. Mullen, E. Jennings, and A. C. Miller.

The Committee on Medical Societies was filled by the appointment of Drs. James Moore, T. McEbright, and E. Sinnet.

On motion of Dr. Thompson, it was resolved that the names of candidates for membership should be read in open society before being submitted to the Committee on Admissions.

REPORTS OF COMMITTEES.

The roll of special committees being called, quite a number were announced as ready to report.

Dr. Hough announced a volunteer paper on "The First Phases of Living Forms," at the disposal of the Society.

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On motion, the Secretary was instructed to telegraph the Treasurer for his books and report.

Dr. Tom. O. Edwards, Jr., of Lancaster, was now appointed Secretary *pro tem.*

REPORTS OF DELEGATES.

Dr. E. Sinnet, delegate to the Kansas State Society, made the following report:

The second annual meeting of the Kansas State Medical Society was held at Fort Scott. They have a membership of about forty, embracing many of the active, working men of the State. Interesting papers were read, which, together with the discussions upon them, gave creditable evidence that men of ability are engaged in the profession of the West. Dr. H. K. Kennedy, of Topeka, was elected President. The Society adjourned to meet at Lawrence, on the third Wednesday of May, 1874.

E. SINNET.

Dr. Hough, delegate to the National Medical Association, reported:

The last session of the American Medical Association was unusually large and harmonious. Much work was done and marked out that will tend to secure that harmony in the American profession so desirable to us all.

J. B. HOUGH.

The Committee on Admissions reported favorably on the applications for membership of the following named gentlemen, all of whom were unanimously elected:

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NEW MEMBERS.

Tom. O. Edwards, Jr., M. D., Lancaster.
T. C. Minor, M. D., Cincinnati.
John U. Riggs, M. D., Bryan.
S. R. Vorhees, M. D., Mason.
D. L. Gilliam, M. D., Nelsonville.
C. T. Smith, M. D., Middleport.
B. T. Spencer, M. D., Newark.
J. M. Waddick, M. D., Toledo.
S. S. Thorn, M. D., Toledo.
T. R. Sparrow, M. D., Columbus.
O. Frankenberg, M. D., Columbus.
Frank Norman, M. D., Columbus.
N. C. Reed, M. D., Columbus.
T. J. Farrell, M. D., Columbus.
J. M. Dunham, M. D., Columbus.
R. Z. Seeds, M. D., Hilliard.
J. G. F. Holston, Jr., M. D., Zanesville.
P. Q. Fisher, M. D., Nashport.
George W. Hill, M. D., Ashland.
J. B. F. Morgan, M. D., Clarksburg.

The Society then took a recess until 2:00 P. M.

AFTERNOON SESSION.

The Society met at 2 o'clock, as per adjournment, and was called to order by the President.

The Treasurer, Dr. S. S. Gray, was present, and entered upon the discharge of his duties.

Dr. J. L. Drake was appointed to fill the vacancy on the Finance Committee.

REPORT OF TREASURER, ETC.

The Treasurer presented his annual report, showing the indebtedness of the Society to be $216.71. The report was referred to the Committee on Finance.

The Librarian's report was now read, and, on motion, adopted.

The report of the Publication Committee, presented by Dr. Stevens, was also referred to the Finance Committee.

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REPORTS OF SPECIAL COMMITTEES.

Dr. J. R. Black read his report on "A State Board of Health." Dr. J. B. Hough read his volunteer paper on "The First Phases of Living Forms." Dr. A. T. Keyt reported on "Caseous Pneumonia in its Relationship to Tuberculosis;" all of which were referred to the Publication Committee, with instructions to print. Dr. E. H. Hyatt made a report on "The Therapeutics of Alcohol." The paper was discussed by Drs. Bartholow, Hough, Russell, and others. Referred for publication.

Dr. A. Dunlap made the following verbal report on "Ovariotomy":

I fully intended, when appointed last year, to have made a further report on Ovariotomy; but during the year the works of Peaslee, Atlee, Wells, and Thomas, and the monograph of Sims, have so fully and ably set forth our present knowledge of Ovariotomy, that little new could be presented on the subject. I would, however, call your attention to one point which I consider important in preparing a patient for the operation.

Not infrequently, when called to see a patient, we find the abdomen enormously distended; the cyst containing fifty or more pounds of fluid. I would recommend the patient to be tapped, and the cyst allowed to partially refill before attempting its extirpation. By this procedure you will enable the walls of the abdomen in some measure to contract, and thus afford you a better opportunity of supporting the abdominal viscera with your bandage after the operation, thereby lessening the shock.

Another point, although made prominent by those authors, can not be too fully impressed upon the mind of the

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operator. I refer to the thorough and careful cleansing of the abdominal cavity after the removal of the cyst. To many, and especially to the beginner, this will often prove the most difficult part of the operation. After the cyst has been removed, the temptation is very great to close the wound, from the fear of exciting peritoneal inflammation. But I think you will find the most fatal and insidious complication with which we have to contend in Ovariotomy is septicemic poisoning. Drainage is certainly important; but it does not and can not do away with the necessity of thoroughly cleansing the abdominal cavity of all serum and blood after the operation.

The President appointed the Committee on Ethics as follows: Drs. Bartholow, Hamilton, Bramble, Stevens, Dunlap.

REPORT OF FINANCE COMMITTEE.

Your Committee on Finance would respectfully report that they have examined the Treasurer's accounts with vouchers, and find the same correct.

The bill of Dr. Hadlock for $50.00 for services your committee do not feel authorized to allow, but would recommend that he be paid $25.00.

They also recommend that the annual assessment be continued at $2.00 per member.

As suggested by the Treasurer, we recommend that all members who are five years delinquent be dropped from the roll, and the same shall not be reinstated until all arrearages are paid in full.

L. M. JONES,
D. D. BRAMBLE,
E. B. STEVENS,
E. JENNINGS,
J. L. DRAKE.
} *Committee.*

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After much discussion, the suggestion of the Committee as to the treatment of delinquent members was laid on the table; the remainder of the report was adopted.

The question of delinquents being under discussion, the whole matter was, on motion of Dr. Hyatt, referred to the Committee on Ethics, with instructions to report at this meeting.

The following additional members were elected:

NEW MEMBERS.

Calvin Pollock, M. D., Donnelsville.	T. C. Hoover, M. D., Bellevue.
Jonathan Morris, M. D., Ironton.	Geo. S. Stein, M. D., Columbus.
J. S. Bailey, M. D., Freeport.	I. Putnam, M. D.

The Society adjourned until Wednesday morning at 9 o'clock.

SECOND DAY.

MORNING SESSION.

The Society was promptly called to order at 9 o'clock, by Vice-President Hough.

The minutes of previous meetings were read and approved.

Dr. Bartholow, from the Committee on Ethics, reported as follows:

The Committee on Ethics, to whom was referred the question of the position of delinquent members, beg leave

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to report that they recommend the passage of the following by-law:

Any member failing to pay assessments for three years and upward shall cease to be a member; and all memberships so terminated may be restored on proof of proper professional conduct, and the payment of the sum of six dollars.

ROBERTS BARTHOLOW,
A. DUNLAP,
EDWARD B. STEVENS,
J. W. HAMILTON.
} *Committee.*

On motion, the last clause of the report was made to read "in full of all arrearages" instead of "the sum of six dollars."

The report as amended was adopted.

On motion of Dr. Hough, the Secretary was instructed to send a message of friendly greeting to the Pennsylvania State Medical Society now in annual convention at Carlisle, Pennsylvania.

Later in the day the following response was received:

CARLISLE, June 11, 1873.

The Pennsylvania State Medical Society accepts your greeting, and reciprocates it.

W. B. ATKINSON, *Secretary.*

REPORTS OF SPECIAL COMMITTEES CONTINUED.

Dr. D. A. Morse reported on "Dipsomania and Drunkeness;" Dr. J. H. Buckner on "Ophthalmology;" Dr. R. Bartholow on "Nervous Diseases;" and Dr. W. W. Seely on "The Treatment of Senile Cataract;" all of which reports were referred for publication.

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ELECTION OF OFFICERS.

The election of officers for the ensuing year resulted as follows:

President—Dr. H. J. Herrick, of Cleveland.

Vice-Presidents—Drs. W. W. Jones, of Toledo; E. H. Hyatt, of Delaware; H. C. Pearce, of Urbana; A. C. Miller, of Orrville.

Treasurer and Librarian—Dr. S. S. Gray, of Piqua.

Secretaries—Drs. W. J. Conklin, of Dayton, and T. O. Edwards, Jr., of Lancaster.

Committee on Admissions—Drs. A. J. Miles, S. S. Thorn, G. W. Pullen, T. G. Vaughters, and S. S. Scoville.

The Society took a recess until 2:00 P. M.

AFTERNOON SESSION.

The Society resumed its session promptly at 2 o'clock.

Drs. T. B. Harvey, R. N. Todd, and T. M. Stevens were introduced as delegates from the Indiana State Society, and Dr. Blount presented his credentials from the Union District Medical Society, all of whom were cordially welcomed by the President, and invited to participate in the deliberations of the Society.

The Secretary then read the following letter from Dr. E. Gray, delegate from the Illinois State Society, which was ordered to be placed in the minutes:

BLOOMINGTON, ILL., June 4, 1873.

Mr. President and Gentlemen of the Ohio Medical Society:

Having been appointed a delegate to your Society by the Illinois State Medical Society, I regret that I can not be

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present at your meeting, and bear in person the fraternal greeting of our society.

Ohio, so fortunate in geographical location, and so rich in all the products of agriculture and the mechanic arts, has long maintained an enviable pre-eminence among the western states in medical science. We of the more distant West have recieved valuable contributions from your schools of medicine—young men, some of whom have already won success and fame among us in the practice of our profession. You have honorable representatives, not only in our State and medical society, but everywhere in the West where business tact and medical skill can find a sphere of usefulness.

We have watched with growing interest the efforts of those of your number who, with laudable ambition, are pushing forward the conquests of medical science. You participate in their zeal and enthusiasm, and share their honor. In your annual Transactions we therefore always expect to find something new and valuable, and we hail the next volume you make with unfeigned pleasure.

Now that the power of the microscope is appreciated, and a better method of inquiry inaugurated, we behold unprecedented advancement, and chiefly by means of histological analysis, in the science of medicine. Physiology has acquired new interest and new power. Since cells are known to constitute in their aggregate life the whole of animal life, and per consequence good health must depend upon the proper functions of these anatomic atoms, cells have naturally enough become the theme of general interest. Their study, aided by the microscope in the hands of scientific men, both in Europe and America, promises to be fruitful of the most important discoveries. Physiology, relating almost equally to biology and pathology, has en-

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tered upon a new era. By revealing more clearly the laws of life, it has made more plain the causes of disease and death. It is sweeping away many of the dark shadows that have heretofore overhung the practice of medicine, and it is yet big with promise to the intelligent physician of the future. He scarcely deserves success as a physician who has not drank deeply at the fountain which physiology, assisted by the microscope and thermometer, not to mention other important instrumentalities, has recently opened.

It is especially gratifying to know that so much interest exists in your Society on all the points involved in this great inquiry.

You will allow me to say, and we hope it is sufficiently evident, that we are in full sympathy with every effort to push legitimate experiment to discovery, and by all honorable and possible means to advance a better knowledge of the healing art—a better knowledge of medical science. Nor will it be immodest to claim that some who came as pioneers to our broad prairies, and surmounted difficulties peculiar to life in a new country, are contributing a fair share of thought and research to the present rapid progress of science.

Hoping that your interest and zeal in the pursuit of scientific truth may never abate, and that the deserved popularity of your Society and its acknowledged usefulness may continue to increase,

I am, yours, with fraternal greeting,

E. W. GRAY.

The President now delivered his valedictory address, which was referred to the Publication Committee, with instructions to print.

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REPORTS OF SPECIAL COMMITTEES CONTINUED.

Dr. J. T. Whittaker read his report on the "Treatment of Chronic Nasal Catarrh." Referred to the Publication Committee.

Dr. G. E. Walton reported on the "Therapeutics of Mineral Springs." Referred for publication.

DISPOSITION OF TRANSACTIONS.

On motion of Dr. Howard, the Librarian was authorized to donate a complete set of the Transactions of this Society to the Thomas Library at the National Soldiers' Home, near Dayton.

It was further directed that the Librarian should furnish extra copies to the County and District Societies throughout the State; said societies paying expenses of transportation.

AMENDMENTS PROPOSED.

The following amendments to the constitution and by-laws were proposed:

By Dr. Landon—Increasing the initiation fee from $3.00 to $5.00.

By Dr. Hyatt—Adopting the recommendation of the Committee on Ethics in regard to delinquent members.

By Dr. Miller—That Article VI. of the constitution shall read *two* instead of *four* Vice-Presidents, and *Secretary and Assistant Secretary* instead of *two Secretaries*.

In view of an urgent invitation from the Medical Society at Toledo, it was agreed, on motion of Dr. Russell, to hold the next annual meeting at Toledo on the third Tuesday of June, 1874.

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Dr. Gray now read his report on "Quinine," which, after a lively discussion by Drs. Russell, Blount, Miller, Hyatt, and Gundry, was referred to the Publication Committee.

The following gentlemen were elected members during the day:

NEW MEMBERS.

S. W. Fowler, M. D., Delaware.
J. H. Smith, M. D., Delaware.
G. W. Gardner, M. D., Harrisburg.
J. E. Brown, M. D., McConnellsville.
J. C. Bishop, M. D., Middleport.
J. W. Welsh, M. D., Deersville.
J. W. Chisholm, M. D., Mt. Perry.
F. Jacoby, M. D., Columbus.
D. P. Adams, M. D., Columbus.
W. J. Wolfley, M. D., Columbus.
E. E. Hughes, M. D., Thurman.
L. F. McKenna, M. D., Junction City.
S. C. Helmick, M. D., Baltimore.
J. D. Nourse, M. D., Reynoldsburg.
W. E. W. Shepherd, M. D., Nelsonville.
J. H. Naw, M. D., Carroll.
J. S. Dew, M. D., Trimble.
E. V. B. Buckingham, M. D., Centerton.
C. H. Reed, M. D., Toledo.
A. M. F. McCollough, M. D., Bealsville.

The Society adjourned until Thursday morning at 9 o'clock.

THIRD DAY.

MORNING SESSION.

The Society convened at 9 o'clock, President Jones in the chair.

On motion, the minutes of yesterday's session were not read.

The Committe on Medical Societies made the following report:

In accordance with the established usage laid down in the Transactions of this Society, your Committee has ex-

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amined the credentials of Drs. L. F. McKenna, P. Q. Fisher, and G. F. Holston, of the Muskingum County Medical Society; of Drs. S. S. Thorn, W. T. Ridenour, J. M. Waddick, S. F. Forbes, and W. W. Jones, of the Toledo Medical Association; of Drs. T. C. Smith and J. C. Bishop, of Meigs County Medical Society; of Dr. E. W. Howard, of the Medical Association of Northeastern Ohio; of Dr. McEbright, of the Summit County Society; of Dr. S. R. Vorhees, of Lebanon County Society; of Drs. S. N. Fowler, L. H. Armstrong, and J. Smith, of Delaware County Society; of Drs. A. C. McLaughlin, H. Senseman, and C. Pollock of the Clark County Medical Society; of Dr. Calvin Welsh of the Delaware Medical Institute; of Dr. L. F. McKenna of the Perry County Society; and of Drs. Louis Schwab and T. G. Vaughters, of the Scioto County Medical Society; and find that the Societies are in good standing, and are auxiliary to this Society.

Further, that your committee have examined the constitution and by-laws of the Stillwater Medical Society, represented by Dr. J. M. Welch, and find that they strictly conform to the requirements of this Society, and recommend that it be made auxiliary to this Society.

A. C. MILLER,
LOUIS SCHWAB,
J. MCEBRIGHT,
JAMES MOORE,
E. SINNET.
} *Committee.*

TIME OF NEXT MEETING.

Dr. Landon moved a reconsideration of the motion agreeing to meet on the third Tuesday in June, which, prevailing, the time of meeting was changed to the first Tuesday in June, 1874.

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Dr. Herrick offered the following: In view of the fact that the late edition of the Medical and Surgical History of the War of the Rebellion is too small to meet the demand; and, in view of its great value,

Resolved, That this Society petition Congress for an increased issue of the same.

Carried.

A lively discussion now sprung up on a motion to petition the Legislature for the establishment of a State Inebriate Asylum, which was participated in by Drs. Howard, Russell, Jones, Morse, Hamilton, Gundry, and Morris.

The whole matter was, on motion, referred to a special committee, to report at next meeting. The Chair appointed the following gentlemen as such committee:

Drs. J. W. Russell, W. W. Jones, R. Gundry, E. W. Howard, S. M. Smith, and H. J. Herrick.

On motion of Dr. W. W. Jones, the Secretary and Treasurer were allowed $50:00 for their services.

The Assistant Secretary was voted the thanks of the Society, and his expenses.

The President announced the following

STANDING COMMITTEES.

Executive—W. T. Ridenour, J. M. Waddick, S. S. Thorn, W. W. Jones, C. H. Reed.

Publication—W. J. Conklin, J. B. Thompson, D. Halderman, C. P. Landon, W. W. Dawson.

Medical Societies—J. Moore, M. S. Pixley, A. C. Miller, J. H. Green, T. D. Davis.

Finance—L. M. Jones, D. D. Bramble, E. B. Stevens, E. Jennings, J. L. Drake.

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Admissions—A. J. Miles, S. S. Thorn, G. W. Pullen, T. G. Vaughters, S. S. Scoville.

Obituaries—T. W. Gordon, David Cotton, E. H. Hyatt, E. Sinnet, A. Dunlap.

SPECIAL COMMITTEES.

Surgery—G. C. E. Webber.

Otology—W. W. Seely.

Physiology—J. T. Whittaker.

Monomania—D. A. Morse.

Nature of the Evidence of Spontaneous Generation—J. B. Hough.

Relation of Regular Medicine to the Pathies of the Day—W. T. Ridenour.

The Mineral Springs of this and other Countries—George E. Walton.

Stricture—A. C. Miller.

Cerebral Amaurosis and its Connection with Disease of the Kidneys—J. H. Buckner.

Pathology—E. H. Hyatt.

Nervous Diseases—Roberts Bartholow.

Puerperal Fever—W. J. Conklin.

Surgery—W. W. Dawson.

Obstetrics—T. A. Reamy.

Ergot in Puerperal Convulsions—D. J. Snyder.

State Medicine and Public Hygiene—W. W. Jones.

Epidemic Mal-presentations—Jonathan Morris.

Small-pox—A. G. Stevenson.

Epidemic Diseases—George S. Stein.

Diseases of the Heart—A. T. Keyt.

Quinine—S. S. Gray.

Puerperal Insanity—R. Gundry.

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Exsection of the Hip Joint—D. D. Bramble.
Consumption in Ohio Penitentiary—N. Gay.
Ovariotomy—A. Dunlap.
Urinalysis—J. W. Russell.
Electrolysis—W. H. Mussey.
Functions of the Spleen—S. S. Scoville.
Muscæ Volitantes—T. D. Davis.
Chronic Diseases of the Lungs—W. Carson.
Sanitary Science—J. R. Black.
Gastric Irritation—E. Sinnet.
Castration for Epilepsy—M. S. Pixley.

DELEGATES TO AMERICAN MEDICAL ASSOCIATION.

A. B. Jones, Portsmouth; H. J. Herrick, Cleveland; J. W. Hamilton, Columbus; L. Schwab, Portsmouth; J. Moore, Ironton; E. H. Hyatt, Delaware; D. A. Morse, Cross Roads; G. C. E. Webber, Cleveland; H. S. Conklin, Sidney; E. Jennings, Dayton; J. C. Reeve, Dayton; J. B. Thompson, Columbus; W. W. Dawson, Cincinnati; P. S. Conner, Cincinnati; E. B. Stevens, Cincinnati; J. T. Whittaker, Cincinnati; R. Bartholow, Cincinnati; A. Wilson, Sidney; Geo. S. Stein, Columbus; A. T. Keyt, Walnut Hills; W. W. Jones, Toledo; L. M. Jones, West Liberty; J. D. Cotton, Marietta, R. Gundry, Athens; W. H. Phillips, Kenton; J. M. Waddick, Toledo; J. H. Rogers, Springfield; A. Dunlap, Springfield; E. Sinnet, Granville; W. P. Kincaid, New Richmond; J. B. Hough, Ridgeville; J. W. Russell, Mount Vernon; J. R. Black, Newark; T. G. McEbright, Akron; T. O. Edwards, Jr., Lancaster; S. S. Gray, Piqua; J. W. Hadlock, Cincinnati; D. D. Bramble, Cincinnati; A. C. Miller, Orrville; S. F. Forbes, Toledo.

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DELEGATES TO STATE MEDICAL SOCIETIES.

Indiana—W. H. Mussey, S. S. Scoville, R. Bartholow, E. B. Stevens.

Iowa—A. B. Jones, John Davis, J. R. Black, C. W. Dunlap.

Kentucky—W. W. Dawson, J. H. Buckner, A. T. Keyt, E. H. Hyatt.

Illinois—S. S. Gray, C. P. Landon, T. H. Kearney, S. M. Smith.

New York—J. A. Murphy, P. S. Conner, D. D. Bramble, J. W. Hadlock.

West Virginia—J. C. Bishop, L. M. Jones, T. D. Davis, M. S. Pixley.

Kansas—J. P. Bing, W. W. Seely, A. J. Miles, J. W. Russell.

Dr. L. M. Jones introduced the following resolutions:

1. That the thanks of the society are due to the retiring officers for their ability and impartiality.

2. That our cordial thanks be tendered to the profession of Columbus for their kindness and interest in our behalf while here, and especially to the Executive Committee for their thoughtful attention and magnificent hospitality. "May they live long and prosper."

The Twenty-eighth Annual Meeting of the Ohio State Medical Society was now declared at an end.

The Society adjourned to meet in Toledo on the first Tuesday in June, 1874.

A. B. JONES, *President.*

W. J. CONKLIN,
T. O. EDWARDS, JR. } *Secretaries.*

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ANNUAL ADDRESS

OF THE

RETIRING PRESIDENT,

A. B. JONES, M. D.,

PORTSMOUTH, OHIO.

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ANNUAL ADDRESS

OF THE

RETIRING PRESIDENT,

A. B. JONES, M. D.,

PORTSMOUTH, OHIO.

GENTLEMEN:—

It would be affectation in me if I were not to acknowledge to you in due form my high appreciation of the more than regal honors you have conferred upon me, and as an excuse for the vagaries which may follow, I simply point to the dizzy height to which you have elevated me, and ask, Is it strange that a less modest man than myself should become bewildered, and even be content to be shipwrecked in such a dreamy whirlpool of soul and sense? When a boy, attending medical lectures, I regarded my professors with an admiration closely allied, if not akin, to veneration, and as I drank in with my ear the, to me, wonderful draughts of knowledge that flowed from their lips like coin from the mint, I had the temerity to look forward, away in the far off future, to a time when I might dispense healing wisdom to boys then unborn, but the idea of ever being elected President of a State Medical Society second to none, and

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being permitted to preside over the deliberations of some of those very grave teachers of medicine who were then living, exceeded the wildest dreams of my boyhood. Mingled with the intoxication that I am fully persuaded every President who has preceded me has felt, and every one who will follow me will feel, is a kind of tremulous doubt as to what trees to blaze, where to squat, or how to build my cabin. But mine, I think, is peculiarly trying on the knees, for I am not permitted to plod along in the well-beaten paths of my predecessors and close with a panegyric in the form of a valedictory, dropping among you a few nicely-culled bouquets of rhetoric, bound up with red, blue, and all kinds of colored ribbons. A new order of things has been established, and I am called upon to deliver an inaugural; an inaugural to an executive body; an executive body in which are the giants of our day. It necessarily must be suggestive—what! suggestive to those very men who were gods while I was still in my boyhood! The very thought is almost enough to beget frenzy.

When I took a survey of the debatable grounds in medicine, and saw so many beautifully polished shafts of marble pointing heavenward, and I trust homeward, commemorating the great and good in medicine; when I saw the strong bulwarks, the beautiful castles, the stately towers and elegant mansions, fit dwellings for the gods, while even the horizon seemed full of tomahawk improvements, each justly claiming the right of squatter sovereignty, I said, "It will require a great struggle for a man to build himself a proud temple there."

A great deal has been said and written in the past few years upon the subject of medical education. We seldom attend a medical association, either national, state, or county, but resolutions echo, "educate, educate, we must

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educate, or short will be our race from the cradle to the grave." This is well. If the city is to be kept safe from surprise, the watchmen in the towers and on the walls must not sleep. But so far as the facilities for acquiring a medical education are concerned, theoretically and practically, our medical colleges of the present day offer all the most ardent philanthropist could desire. And if some, or even many, of the alumni fail to reflect honor or credit upon their respective *Alma Maters*, it by no means follows of necessity that the schools in which they have been educated are either responsible or at fault. It is but the legitimate result of a fixed law that pervades, if it does not control, all human effort. The parable of the sower who went forth to sow, pertinently illustrates my idea. Good seed must have good soil, if we expect to gather good fruit. Then is it strange, if among the thousands who are annually graduated in medicine there should be a goodly number of them unfit for the practice of their high calling? The practice of medicine is very different from the study of medicine; and while many find the latter very pleasing, the former is equally irksome. They do not discover their mistake until all their means have been exhausted, and from sheer necessity they are compelled to continue in the practice of their mistaken calling, not only contrary to their inclinations, but even to their better judgment. This is, perhaps, one of the most fruitful causes of the many drones in the profession. Again, many students are noted for shrewdness, for tact, in accomplishing a given object. They possess the secret of polishing brass until it glitters like gold, and with this they often deceive the most wary. From this class comes the mere routinist; he begins his profession in that way, and he ends it in the way he began it. Now, it is scarcely possible to enforce a system of medical

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education that will entrap such persons. I care not how strict the rules of a medical college may be, or how rigid their examinations, such persons will glide through the "greenroom" like eels through the fingers.

There is also another class of persons of whom we have to make doctors. I allude to that class who get their intellectual growth very young. They go through their medical course swimmingly, and graduate with a most promising future awaiting them; but they are like apples that ripen early, they decay early. This, of course, is not an invariable rule, but it is a general one, and no amount of human knowledge or sagacity would enable medical teachers to say truthfully and wittingly to such persons, You must not pass our portals to receive the crown awaiting the worthy alone. This class of physicians begin their practice with a flourish of trumpets; but, unfortunately for them, the ramparts of disease are not always like the fortifications of that ancient city whose walls fell when loud blasts were sounded from a few rams' horns. They generally soon become discouraged, yet often remain in the profession, a kind of eating ulcer in the body-medical. Then there is also the well educated but unscrupulous class of persons, men of force of character enough to excel in any profession, but lacking in moral force, of no sterling worth, who choose for their calling the profession of medicine. They graduate with honor, but practice without honor.

I have alluded to these different classes of persons who infest our profession, and who infest every profession and every class of business in society, in order to illustrate what I have to say regarding medical education; to show how utterly impossible it is for our medical teachers to guard against imposition from such sources, and to exonerate them from the opprobrium that is sought to be cast upon

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them. Still, I would not have one sentinel sleep who has volunteered to watch. No profession needs such vigilant watching of those who enter its ranks as ours, simply from the fact that the community is more poorly educated in medicine than in almost anything else. There are only a few educated men but have some knowledge of law, at least they soon learn to judge of the legal abilities of an attorney, whose want of knowledge of his profession has cost them a few paltry dollars; and the ability and researches of the theologian soon crop out, patent to all who will take the trouble to go and hear him. But the mystery of compounds and the novelty of elixirs, together with the wise looks of a doctor, are simply unfathomable. And this is not the least of the many grave reasons that some of our conscientious and enthusiastic teachers of medicine assign for their great anxiety to elevate the standard of medical education. To overcome this and many other of the embarrassments referred to, the community at large must be educated. How is this to be accomplished? I answer, through the press, through our daily newspapers. It seems strange to me that some of our enterprising journalists, instead of having some half dozen or more reporters employed to report dog-fights and runaway matches, do not employ at least one eminent medical contributor, whose duty it shall be to set forth clearly and simply the best means of husbanding the vigor of youth for the weakness of old age; for criticising closely practitioners in medicine; thoroughly ventilating traveling impostors who affix M. D. to their names, and whose flaming advertisements, if we were to believe them at all, would force us to the conclusion that, verily, they were enabled to render "Nature immortal, and let death play for lack of work." To begin a warfare against patent nostrums; to show to every think-

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ing mind that it is not simply humbuggery that they are aiding and abetting by buying such medicines, but the sowing broadcast a poison, or poisons, that is more devastating to the health of the human family than half the diseases we are called upon to combat. Every physician will bear testimony that he is largely indebted to the dissemination of those poisons, in the form of patent medicines, for his yearly income. The community at large should be taught that the adage, "If it does no good it will do no harm," is a myth; that medicines are not playthings for the stomach; that they either cure disease, beget disease, or have a coinciding tendency with disease. And, as physicians and philanthropists, we should not be content to simply denounce such a curse to the afflicted, but to do *more*—to look up the most direct channel and effective way to reach the sufferers who are day by day poisoning themselves; and to this end a column of a single popular daily paper could do more good than all the medical journals combined. Again, our law-makers have always treated our petitions and suggestions with marked respect, and I have no doubt that, with a proper effort, we could soon have a law passed, both state and national, forbidding the sale of any patent nostrum, without first having a true formula of the contents of the box or bottle printed in English and pasted on the outside; and if, upon chemical analysis, they prove to have more or less than stated, to subject the vender to a fine, or fine and imprisonment, at the discretion of the court. In ordinary business transactions in trade if you sell a man an article, guarantying it to be what it really is not, the law compels you to make it good, and in many cases adjudges you guilty of fraud, and punishes you accordingly. Yet in such cases all you take is a man's money, but if you sell a man a medicine that is not what

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you represent it to be, you do not simply rob him of his money, but you also rob him of his health. The former you may make good, the latter may be beyond your power to ever restore.

Much has been said regarding the fees charged by the different medical colleges, those in the East claiming the colleges in the West have reduced the cost of completing a medical education; that they do not charge enough. The latter may be true, but taking all the contingent expenses into consideration, I am satisfied the teachers of medicine in the West find it as remunerative, if not more so, than those in the East. Supply and demand regulate the price of every commodity. A well-fatted and thorough-bred bullock is in as good and perhaps a better condition for the table when he leaves the famous blue-grass regions of Kentucky than he is when landed in the city of New York, but his sirloin would bring double the money there that it would have done where he was raised. I need not say anything of the thoroughly organized and efficient system of teaching the different branches of medicine adopted by our colleges; you are all familiar with them, and I am quite sure you will agree with me when I say they are fully up with the times. There may be a doubt whether or not the advantages resulting from a spring and summer course justify the additional expense. After sixteen, or at most twenty, weeks have been spent in listening to medical lectures, a student begins to feel them grow a little dull—he needs both a change and rest; the remaining weeks spent in the office of his preceptor, and occasionally with his patients, will make him, I think, as thoroughly practical. Then make it necessary for him to attend three courses of lectures before graduating him: the last course could be given free of charge, without additional expense to the college.

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While I feel proud of the medical colleges in our state, I believe I feel a much greater degree of pride in our medical journals. They come to us weekly and monthly laden with the choice fruits of the tropics, the sweet spices of the East, and the gold of Ophir. All that is edifying, needful, practical, and good, all that flows from the deep researches of the sprightly Frenchman, the untiring and indefatigable energy of the thoroughly educated German, and the cool, deliberative wisdom of the Englishman, we find glassed in their pages. From the East, from the West, from the North, from the South, wherever the good Samaritan has stopped to fasten his steed and pour the healing balm upon the bruised and bleeding wound, have their reporters lingered long enough to find out the virtues and medicinal properties of the wonderful elixir, and hastened to spread them upon their pages with the injunction for us to go and do likewise. Compare the matter of a medical journal printed thirty years ago with that of to-day, and you will find that of the former heavy, studied, labored, not to say a little dull, yet, it is true, containing rich ore. The latter has but the pure gold, fresh from the refiner's crucible; coin that passes current in our daily labor at our patients' bedsides. We have through them lectures not sixteen or twenty weeks out of the fifty-two, but every week, and every day of the week, timed to our daily wants.

I have been tempted, and will yield to say a word regarding the annual reports of the committees upon the various medical subjects assigned them. Occasionally they seem to forget they are addressing medical men who are well posted in medical literature, and, while these reports are prepared with great care, showing deep research and an intimate acquaintance with their subjects, instead of referring to their authorities by book and page, they often

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quote them at length, making it sometimes a little irksome, especially when so much business has to be crowded into the brief space of time allotted us. While reports are expected to be full, they should be brief, and abound in suggestions that each one may elaborate afterwards. It is very true that it requires a great deal more labor to give a succinct history of any given subject than a verbose one, but the former awakens the understanding, and falls upon the ear with a musical ring; the latter is much more soothing in its effect, indeed, Morpheus has many less puissant wooers. I will next call your attention for a few moments to Tasteless medicines, Palatable medicines, and Elixirs. Milton tells us man sinned, brought death into the world, and with it all our woe. Inspiration assures us that after the fall of man thistles grew instead of wheat, and cockle instead of barley. Experience teaches us that it is a fixed law that weeds will grow, and they can only be made to give place to the good things of earth by the sweat of man's brow. A similar law, if not the same one, applies to remedies and diseases, doubtless a result of the *same* curse; and even in this no one can see infinite mercy more clearly than the physician. No inconsiderable number of the community are monomaniacs upon the subject of taking medicine, and if they could only find medicines that were palatable, they would make store-houses of their stomachs; they would live on them, or, more truthfully, I should say they would die of them. For such persons it is a mercy that some medicines are necessarily naseous, that some are necessarily bitter, and that all, if unwittingly used, are noxious. Pharmaceutists are wild upon the subject of elixirs. A few of them may be good; some of them may answer for placebos (to those who use them), but a majority of

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them are worthless. An Elixir of Wine, Beef, and Iron sounds well, but I read upon the label of a bottle handed me a few days since, a still more captivating title for an elixir: It was Elixir of Wine, Iron, Beef, and Horse-radish. Shades of Epicurus! What stomach could resist? And, if you will pardon me, I will venture to predict that it will not be long until some enterprising pharmaceutist will prepare for us an Elixir of Oysters, Honey, and Hot Buckwheat Cakes.

Tasteless medicines, such as sweet quinia, may have tempted the most wary of us to invest, but experience has taught us they are a great deal like whisky with the "fight" taken out of it, leaving to further distillation only water and burnt sugar. Medicines have an individuality: aromatics are hot and pungent, tartar emetic produces nausea, quinia is bitter, and, if it must be changed, it is quite as well to make it more bitter still, because all these properties are agencies in relief of disease.

I think it well to call the attention of the Society to the following resolutions, passed by the American Association, for the care of inebriates, in New York, November, 1871. First,

Resolved, That this association regards inebriety as a physical disease, which, in the great majority of cases, can only be combated by medical treatment and necessary restraint. Second,

Resolved, That in the opinion of this association it is the duty of legislators, as a means of state economy, to provide means for the erection and encouragement of hospitals, for the detention and treatment of confirmed inebriates.

Specialists, in the past few years, have grown in grace and in favor with the profession. They have made many invaluable contributions to the healing art, both mechan-

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ical and medical. Even in my recollection they were regarded by the general practitioner with a jealous eye; that their tendency was toward quackery. They have proved to us that it is not necessarily so. Indeed, to thoroughly understand the whole human system, "so fearfully and wonderfully made," together with all that is now known of the *modus operandi* of medicine, falls within the compass of only a few. They have become a necessity. We commend for them the special *vigilance* of the general practitioner. We offer you our congratulations on the waning of the many "isms" in medicine. Many of them have already gone, and the rest will soon flitter out their ephemeral existence. Old "isms" have lived, and new ones will arise; perhaps that the scripture may be fulfilled which assures us that "many false prophets shall arise." Of the many devotees of Hanneman, you will find only a few of the present day who will acknowledge to their having been sugar-coated without evident humiliation.

Gentlemen, in conclusion permit me to say that in the future my highest ambition shall be to so live that in the end I may in some degree merit the very distinguished honor you have conferred upon me. And when the end to each and all of you does come, which inevitably *must* come, may the sands of your lives drop out one by one so gently, so smoothly, that your souls will unconsciously plume their wings to add other stars to the firmament of the Great White Throne.

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REPORT

ON A

State Board of Health,

BY

J. R. BLACK, M. D.

NEWARK, OHIO.

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REPORT

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It is a maxim, of whose truth we have abundant proof, that laws in advance of public sentiment are dead letters. More especially is this true of a republican government, in which laws are usually framed in accordance with its average, not its highest intelligence. In a government of a more absolute character laws are frequently enacted and well executed which are far in advance of its popular sentiment, thus at once educating the popular mind up to their standard and conferring a lasting benefit upon the community. It is partly to this governmental difference, and partly to the necessities of a denser population, that Great Britain has been so long and so far in advance of us in governmental action in reference to the protection of the people from the ravages of disease. At the present time

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the whole of England is divided into sanitary districts, entitled, respectively, Urban and Rural Sanitary Districts, with a health officer and nuisance inspector in each. There are also port sanitary authorities to take cognizance of the sources of disease in ships. The system bids fair to work out immeasurable benefits for the physical well-being of that nation, and it is one which it would be well for us to follow since we can not lead.

The necessity for sanitary legislation is sufficiently obvious,—the protection of a community from causes of disease, public in their nature, or the protection of every member of a community against sanitary evils which he, as an individual, is powerless in doing for himself.

This necessity may be fitly illustrated by citing some examples of an every-day character. When the alleys and streets, and the row of open vaults, full of loathsome excrement, adjacent to one's premises, emit volumes of poisonous effluvia, so that some member of an innocent family suffers thereby in the way of sickness, perchance to the destruction of health, or, as it often happens, of life itself: is such an evil not a proper subject for legislative action? Or, suppose that the cupidity of a narrow-minded capitalist erects tenement houses so that effective ventilation to their occupants is impossible, whereby the germs of some infectious disease acquire a peculiar and malignant virulence, and so scatter terror, torment, and death upon an entire neighborhood: is such an evil not a proper subject for legislative action? Or, suppose such a case as the following, which actually occurred during the past winter: A young lady temporarily residing in Cincinnati is seized with small-pox. Very naturally preferring home to a small-pox hospital, she closely veils herself and takes an omnibus from her boarding-house to the Pan Handle depot. Being too sick to walk from

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the omnibus to a sleeping-car she is carried in the arms of a porter, and occupies for the night a sleeping-berth in a palace-car, wherein are other passengers. Arriving at the depot of her home after passing this city, still closely veiled, she is again carried to and from the omnibus to her home. She easily escaped the vigilance of the municipal authorities, and of the conductor, and so traveled for more than one hundred miles with a number of unsuspecting passengers, scattering the seeds of disease and death all along the route. In doing all this she violated no law of the land, as the protection of the public health is a matter which has not yet entered into the thoughts of our legislators. For those guilty of taking a few dollars our Solons have long ago provided laws tending to the protection of the public, but for those who thoughtlessly become instrumental in destroying health and even life, they have provided no remedy and no measure of protection. Apparently, they have failed to recognize the fact that the changed condition of our social and civil relations requires laws in keeping with the times, for a proper promotion and protection of the public good.

In olden times it was not practicable for one very ill with a contagious disease to travel in a stage-coach along a highway, but now, any one with small-pox, scarlet fever, or cholera can travel to almost any point without discomfort, and no one to say him nay, if the will or acuteness of a conductor does not.

The remedy for such evils as these is not in a State Board of Health, but in educating the public mind on this subject so that it may perceive the necessity and the benefit which enlightened sanitary legislation is capable of conferring. A State Board of Health, without laws empowering it with a field of control, would be only a state figure-head, or more

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properly a set of mere closet-office dignitaries, seeking and pleading for some information that would give them a show of usefulness. And there can be no doubt that the sentiment of the public is not in favor of sanitary legislation. I need only instance as evidence of this fact that some of the leading newspapers of our state ridicule every proposition of the kind, averring that sanitarians wish to prescribe what people shall eat and drink, and what clothing they shall wear. Such witlings wholly fail to perceive the essential distinction between *public* and *private* hygiene. It does not directly concern the public, and we ask and need no protection of the law if our neighbors suffer from dyspepsia; but it does concern us, and we need the protection of the law, if our neighbors from their bad sanitary environments breed a very malignant form of typhoid or scarlet fever, whose seeds are wafted into our lungs and the lungs of our children at every breath. The rule which determines when an act, in its public-health relations,—be it of omission or of commission,—should be amenable to law, is a plain and simple one: will it endanger the welfare or health and lives of those around? If it does, then the law should intervene and protect; if it does not, then it is a matter with which the public and the law have no concern.

Viewed in this light, what should be the nature and scope of sanitary legislation? Obviously, it should embrace all those acts and processes whose leading objects are, or should be, the guardianship of the public health. Filth on streets and alleys is more commonly regarded as an offense to the eye than to the public health, and rank odors as more of an offense to the olfactory nerves than to the blood. If this were true, then the present mode of intrusting the cleaning of streets, the removal of sewage, etc., to those whose knowledge is no deeper than their senses, would be

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proper. But the real and practical offense is just what the unthinking multitude do not consider it to be, and so the control of these departments should be placed under those competent to judge what the leading object is, and who should be held responsible for its proper performance, not only to sight and smell, but especially in its relations to the public health. As the law at present reads, a health officer is only a sort of solitary oracle, consulted on rare occasions by political bummers; he may say, but he can not do, and as to action upon what he does say, it is too often governed by mere political expediency. A more perfect farce on the great duty of public sanitation it would be difficult to enact.

By giving proper authority to sanitary officers they would be able to act as true conservators of the public health, abolishing, for example, the open-vault system for the reception of ordure, and substituting, when removal by water is impracticable, the dry-earth system. They should also be empowered to oversee architecture in its relations to health, so that in every public and private building efficient ventilation should be rendered possible; they should be enjoined to detect food adulterations, and oversee the purity of water supplies; they should be empowered to prevent persons affected with dangerous infectious diseases from entering densely populated places, and when in such a place to effect their isolation; attending also to the purification by disinfectants of infected houses; to the collection of vital statistics, and to the supervision of public vaccination. When our people and their legislators are educated up to their duty in these matters, and provide a suitable code of sanitary laws, it will be time enough to have an executive head to the movement, in the form of a State Board of Health. Until then, we must be content to act as educators, seizing on apt opportunities, in private and public,

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to enlighten the popular mind on what we ourselves are well convinced,—that sickness and death, long lives and short ones, are conditions over which public hygiene has an unquestionable control.

I can not close this brief report without adverting to the noble manner in which the medical profession endeavors to perform the great duty of trying to save men and women from the grasp of disease. The public do not regard the mission of the physician in the twofold light in which he himself regards it—to prevent as well as to cure disease. It is a very rare occurrence for any one to call upon the physician for preventive advice; it is almost invariably to cure, and after prevention is impossible. Yet he gives such advice freely, whenever he can do so without offense. He has applied himself with an almost incredible assiduity to a proper understanding of the causes of disease in order to prevent them, of which I may instance the plague, scurvy, typhoid fever, bilious fever, yellow fever, and Asiatic cholera. He is the most earnest of all advocates for vaccination, for quarantine, for the discovery and effective power of checking the spread of disease by disinfectants. In his state and national councils the best means of preserving health are considered on almost every occasion; he stands foremost in every sanitary and health association, and advocates with unflinching zeal the necessity of a sanitary reformation,—in short, in whatever part of the world, in every great sanitary improvement by which sickness has been prevented, disease abolished, and the average duration of life extended, it is the physician who has pointed out the way and headed the movement. And, in doing all this it must be borne in mind that he is virtually laboring to do away with the necessity for his own services, so that he, more than any other, is striking at the root of his pe-

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cuniary success as a physician. Can any other profession boast of aims so noble and disinterested? Do lawyers ever hold councils as to the best means of preventing crime; or do the clergy petition more favorably for the destruction of Satan than for the building up of the Church.

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First Phases of Living Forms,

BY

J. B. HOUGH, M. D.,

Professor of Chemistry and Toxicology in Miami Medical College of Cincinnati, Ohio.

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FIRST PHASES OF LIVING FORMS.

BY

J. B. HOUGH, M. D.,

Professor of Chemistry and Toxicology in Miami Medical College of Cincinnati, Ohio.

Certain microscopic observations made by the writer at various times during the last two or three years are hereby submitted as further confirmations of the published statements of Pringsheim, Hicks, Carter, Nicolet, and others, concerning those heterogenetic changes with which modern biology has to deal.

The practical bearings of questions of this nature upon physiological and pathological studies need not be mentioned.

Whatever may be the final decision of the question of so-called "spontaneous" generation, the changes here recorded are believed to have undoubtedly occurred. The cases are selected somewhat at random from a large number of similar observations. Without any attempt at graphic description, I desire to state simply and summarily what I have seen. As will be readily observed, two classes of changes are recorded—changes from higher organisms into

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lower, and changes from lower organisms into higher. The difficulty which besets the problem of the origin of living forms *de novo*, or from real or supposed invisible germs, has nothing to do with the question of transformation of visible organisms. An intelligent, honest search, and earnest desire for truth, are the only requisites for sound conviction. As long ago as 1845, changes similar to those here confirmed were published by Dr. Gros.* But few truths that bear not the seal of orthodoxy can gain a hearing in less than a quarter of a century, and the statements of Gros were generally disregarded.

A small quantity of sea-water, obtained in the fall of 1871, contained, besides several marine algæ, numerous spirillæ, a few diatoms, and a small number of monad-like forms in very active motion. The whole was placed in a shallow glass jar and replenished with artificial sea-water. In a few days some very decided changes became manifest. Considerable portions of an ulva, previously green and healthy-looking, began to assume a brownish tint and exhibit general signs of impending dissolution. The chlorophyl granules, besides changing to a brown or pale amber tint, began also to assume an irregular outline and to aggregate themselves into clusters, and also to show evidences of an external covering of transparent protoplasm. Finally, the different clusters of chlorophyl granules, with their gelatinous envelopes, separated entirely from each other; while the individual granules of which they were composed coalesced more or less completely, thus forming, to all appearances, veritable amœbæ. The specimens were

*Bullet. de la Soc. de Nat. de Moscou, 1845, p. 339.

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carefully watched in suitable growing-cells, and the following additional changes observed: Some of the amœboid masses, with their contents, became in a short time entirely transparent by the gradual disappearance or solution of the chlorophyl granules, while within the space of one or two hours from the date of separation the masses began to take on the appearances of life peculiar to the protistic forms they seemed to be. The slow, uncertain, progressive motion, the protean changes of form, the protrusion and retraction of pseudopodia in some instances, and the radiating filaments of the actinophrys in other individuals, were all distinctly observed.

In other amœboid masses, indistinguishable in other respects from the masses before mentioned, the chlorophyl, instead of disappearing, seemed to have undergone a process of fusion or reorganization, resulting in the production of two, four, or some even number of diatoms (encyonema). In these cases the amœboid movements were not observed, and the retrogressive changes seemed to have culminated in the initiatory steps of a higher organization. At this time the whole mass of sea-water was teeming with amœbæ and diatoms, while the spirillæ had apparently all disappeared, and a new species of marine algæ (ulva linza) started into growth in the greatest profusion from all parts of the jar. Small drops from the same jar were repeatedly watched at short intervals for several hours, and in almost every instance certain forms disappeared and others appeared in their stead; while in numerous instances forms supposed to be transitionary were observed, and in a few cases changes believed to be transitionary were distinctly seen.

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In conclusion, from numerous observations with both salt and fresh water, the writer states his conviction that the following, among other transformations, may and actually do occur:

Chlorophyl into protoplasm; chlorophyl into actinophrys; chlorophyl into protamœbæ; chlorophyl into amœbæ; chlorophyl into arcellæ; protoplasm into actinophrys; protoplasm into protamœbæ; protoplasm into monads; amæbœ into englenæ; amœbæ into protococcus; amœbæ into paramœcia; amœbæ into scenedesmus; protococcus into desmids.

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THERAPEUTICS OF ALCOHOL.

BY

E. H. HYATT, M. D.,

DELAWARE, OHIO.

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Therapeutics of Alcohol,

BY

E. H. HYATT, M. D.,

DELAWARE, OHIO.

MR. PRESIDENT AND GENTLEMEN:

Having been assigned the duty at our last annual meeting of reporting upon the *Therapeutics of Alcohol*, we take occasion first to say that it is not our purpose to enter into a discussion of the moral questions involved in an improper use of this agent, so potent for evil, but shall content ourselves for the present by turning all these questions over to the clergy and lecturers on moral reform, and confine ourselves *strictly* to a discussion of this subject from purely a *professional* or *scientific stand-point*. Neither is it our design to lay before you, gentlemen, an elaborate report, but simply to make a few suggestions as to the true *nature* and *therapeutic action* of *alcohol* upon the human constitution. In doing so we may come in conflict with long-established views and opinions of many of the profession. Should this be the case, we trust that the discussion of the subject may be characterized by courtesy and candor.

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Alcohol is the *product* of vinous fermentation. Of the *mode* of its production we will not speak, as all are presumed to be familiar with the process. Its chemical formula is C_4, H_6, O_2.

And first, with regard to this subject we take the position that the classification of *alcohol* as a *stimulant* is a *mistake.* It is not a *stimulant* proper, it is a *narcotic.*

It is necessary in the outset of this discussion to observe that there is a *marked distinction* between the action of a *true stimulant* (such as ammonia), and that of *narcotics* (such as opium and alcohol). A true stimulant exalts *nervous force,* and thereby invigorates the circulation, increasing the *force* and *frequency* of the *pulse,* but does not exert any marked influence over the intellectual part of the brain or mental phenomena, but stimulates the organic or merely animal functions of the brain, and the sympathetic nerve throughout the system. Narcotics, on the other hand, while they at first accelerate the pulse, do not so much increase its force, and, unlike stimulants, produce a marked change upon the mind, exciting, confusing, or lulling it. In other words, *stimulants* do not affect the phenomena of mind; narcotics, always. Again: stimulants in their action are seldom so violent as to be succeeded by much reaction. Such, however, is not the case in the action of alcohol. Whilst it produces a temporary acceleration of the pulse, and enlivens the mental faculties, yet its *depressing* influence over the nerve forces, mind, and intellectual faculties is sufficiently marked to characterize it as a narcotic agent. The impairment, therefore, of the intellectual functions of the brain, of volition, and sensation, and the depressing and paralyzing influence over the nerve forces constitute the LEADING PHENOMENA in the action of alcohol, and the *characteristic difference* between *it* and the action of *true*

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stimulants. The *leading phenomena* exhibited in the action of any therapeutic agent (and not its transient or evanescent effect) should determine both its *character* and *classification*. This rule, when applied to the action of alcohol, would place it among the *narcotic poisons*.

At this point we are brought in direct conflict with high and established authority—authors whose opinions are deserving of much weight, and whose position in the profession entitles them to the highest consideration and regard.

While therefore we concede that the eminent wisdom and ability of our authors of *Therapeutics* and *Practice* entitle them to the highest professional consideration, yet we must be permitted to dissent from their views respecting the subject under consideration. And here it may be remarked that authors of practice, both in this and other countries, namely, Wood, Watson, Flint, Niemeyer, and others, when referring to alcohol as a remedial agent, speak of it as a *stimulant* ONLY; no reference whatever to its narcotic action. But the *classification* of *alcohol* as a *stimulant* by these authors, as well as by many authors and writers on *materia medica* and *therapeutics*, we hope now to be able to show is an error. And in order to meet the question squarely we quote first from Dr. Pereira's *materia medica*. He says in regard to alcohol, that it is a "*Stomachic Stimulant*, employed to relieve spasmodic pains, and gives relief in cases of indigestion attended with pain." Also, that it is a "*Stimulant and Restorative*, given with advantage in the latter stages of fever." Again, that it is a "*powerful excitant*, used to excite the vital powers," &c. If alcohol, when administered, relieves spasmodic pain and painful indigestion, that relief is not obtained from its stimulating effect, *surely*, but by producing anaesthesia, or a want of sensation in the gastric nerves. If its action were that of a stimulant, would

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not the sensitive condition of the gastric nerves be increased, and the pain and suffering be aggravated by its use? But this we do not find to be the case. And moreover, instead of alcohol being a powerful excitant to the vital energies, it is utterly incapable of stimulating *vital action.* We must be careful not to confound NERVOUS FORCE with VITAL FORCE. *Nervous force* may be very much increased, as in high inflammatory fever, without any corresponding increase of *vital force.* Again: there may be no failure of vital energy, and yet a sudden deficiency of nervous force may peril the continuance of health and even life itself. To exalt *nervous force,* therefore, is not necessarily to exalt *vital force.* But that which tends to destroy the former must at length repress and extinguish the latter.—(*Headland.*) When, then, there is a failure in vital energy, *no stimulant,* much less a narcotic (such as alcohol), will serve to prolong life, for neither is able to *generate* or *communicate* fresh vital power.

On the other hand, when there is a sudden failure of *nervous* force, stimulant medicines are useful, not by communicating *vital* energy, but by remedying the *want* of nervous action, by which *want* the manifestation of vital energy is subdued—or in other words, by counteracting the failure of nervous force, which "hinders the manifestation of *vital* strength."

The same author again remarks that *alcohol* is a "Stimulant and Restorative in low forms of fever." In this type of disease the other portions of the body have become inactive and insensitive, whilst the nervous system, the "*ultimum moriens,*" that upon which disease exerts its last destructive force, remains active and sensitive. Indeed, the nervous system is active beyond the endurance of itself; and the result is, an increased destructive metamorphosis of the tissues.

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If in such pathological states alcohol is used as a remedial agent, it can not be for the purposes of a "*Stimulant* and *Restorative*," as stated by Dr. Pereira, but to *hebetate*, or to hold the nerves in *abeyance*,—to *suspend* or *check* excessive nervous action,—while with *nutrients* and *restoratives* we build up the tissues and restore the lost balance of the functions.

The conclusion, therefore, seems clear to our mind that the controlling effect of *alcohol* over the nervous system in such cases of disease, is entirely due to its *narcotic* instead of its *stimulating* influence.

Again: Christison and Griffith in their Dispensatory tell us that *alcohol* is "primarily a *Stimulant* and secondarily a *Sedative*." This statement is perhaps a nearer approach to the truth. It is proper here to observe that, when given in small quantities, what is said to be its stimulant action may be the chief manifestation, and its depressing influence may not take place. So much is this the case that alcohol is by many authors and writers regarded as a *stimulant*. But the same thing is remarked of opium. But the effects of a large dose of alcohol are sufficiently obvious to indicate its place among *narcotics*.—(*Headland.*)

It is also true that the depressing effect of a full dose of either alcohol or opium over the mind and nervous system is as distinctly marked in the one case as in the other. And I may add further, that even the *primary acceleration* of the *pulse* and the enlivening of the mental faculties which are witnessed in the use of either *alcohol* or opium, are not due to their *stimulating action*, but are to be attributed to the *narcotic* effect upon the *nerve-centers* as an irritant poison, and the *vital reaction which follows*. It is not therefore *stimulation;* it is *irritation* and the vital reaction in the elimination of the poison, which increases the frequency of the

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pulse. And the result is, a constant wasting or diminuition of vital strength. In this connection we will make one more reference to authority, Drs. Wood and Bache, who, like the authors above quoted, speak of alcohol as a "*powerful diffusible stimulant*," and "valuable in states of the system characterized by extreme exhaustion." The objections urged above bear with equal force against the position taken by these authors respecting the classification of alcohol as a "*diffusible stimulant*," valuable, say they, "in states of the system characterized by extreme exhaustion."

Now, we ask, is this position tenable? Take for example *anæmia*, where there is a failure of the vital forces, an impoverished condition of the blood. In the exhausted state of the system which characterizes this disease, it can be of no value whatever, because, as before stated, it is utterly incapable of stimulating *vital action* or improving the condition of the blood, and is powerless in increasing those elements upon which nutrition and life depend.

We are also told by the same authority that alcohol "communicates additional energy to the muscles." To establish this it is necessary to prove, first, that alcohol *is food*, capable of being assimilated and its elements appropriated to the general purposes of the system.

But this doctrine is still wanting in proof. And not only so, but the evidences elicited by recent researches upon this subject point in the opposite direction, and go very far to prove that the human system is utterly incapable of converting alcohol into either muscular or nervous tissue, or in any way capable of adding *real* strength to either. But its influence only renders the individual unconscious of the magnitude of obstacles instead of imparting strength to overcome them, and, drinking beyond a certain limit,

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he loses not only the consciousness of difficulties, but all control of both *mind* and muscle.

For instance, if a man decides to commit a crime he drinks alcoholic spirits—not to stimulate his mind to a better conception of the realities of life or to a more correct perception of the enormity of the crime, but to repress his sense of right and to hebetate or stupefy his conscience.

The disturbance of the mind thus produced is not partial but of a general character, extending to all the intellectual functions. It especially affects the brain in such a way as to render that organ at once more or less incapable of ministering to any mental operation. The mind becomes confused and bewildered; volition is impaired; the faculty of estimating the ideas of *time* and *space*, together with the power of accurate co-ordination of muscular movements, is disordered or lost, together with *reason*, *prudence*, and *moral sense*, which form a "thin veil over the sensuous nature." The effects of alcohol proceeding to develop themselves, the nerves of sensation are completely paralyzed; the individual becomes voiceless, and falls to the rank of animal of the lowest order. This paralysis extending itself to the nerves of motion, leaves the body in a complete state of insensibility; after this, regular and progressive extinction of the vital properties of the various portions of the nervous system. The last stage may follow if the quantity of the absorbed alcohol be considerable; the paralysis reaches the heart, and *stupefication*, *coma*, and *death* are the immediate consequences, exactly in the same way as with other narcotic poisons; and the *post-mortem* appearances in either case are the same.

Dr. Ogston examined *post-mortem*, 117, the result of alcoholic poisoning, and found, in every case but one, *congestion of the brain* with effusion in the ventricles, which had the

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odor of alcohol, and in one instance said to have been inflammable. Also, found thickening of the *arachnoid*, injection of the *pia mater* and *induration* or *softening* of the *cerebral substance.* Of 74 of the above number, in the respiratory organs were plural adhesions and emphysema; in 56, the heart and its appendages, hypertrophy and dilatation, obesity, valvular disease, pericardial adhesions, or thickening, and atheromotous or osseous deposition, or degeneration in the large vessels; in 66 cases, in the *liver* there were fatty degeneration, hypertrophy, cirrhosis, and the nutmeg appearance; in 51 there were hypertrophy, congestion, and fatty degeneration of the *kidneys.* In three cases the stomach was in a state of atrophy, congestion, softening of the mucous membrane, and thickening of the walls.—(*Brit. and For. Med.—chir. Rev.*, 1854.)

On the other hand, how strikingly similar are the morbid appearances *after death* in cases of *opium poisoning.* We find as a rule, *congestion* of the *brain*, with more or less *serous effusion* in the *ventricles*, *congestion* of the *lungs*, a livid hue of the surface, and a *liquid* state of the blood, &c.

This similarity, therefore, in the *post-mortem* appearances, is another evidence of the correctness of our views in classing alcohol, alike with that of opium, as a *narcotic agent.*

Again: alcohol is not a heat-producing agent; that is, it is incapable of increasing the caloric of the human body, as is believed by many.

Liebig at one time took the ground that when alcohol was taken in small quantities it did not pass off with the secretions, but was consumed or burnt in the blood into carbonic acid and water, thereby increasing the temperature of the body. This theory has since been exploded, and Liebig himself has since acknowledged his mistake.

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The truth is, when alcohol is taken in sufficient quantity to impress the system the *temperature* of the body perceptibly falls under its influence, as is fully indicated by experiment with the thermometer.

Dr. J. Davy, to whose investigations our present knowledge of the temperature of the human body is chiefly due, says that the "*ingestion of wine has a positively depressing influence on the* TEMPERATURE *of the body,* WHICH INCREASES *with the* QUANTITY TAKEN."

Again: Dr. Carpenter, in his Physiology, says that "extended experience has shown, that by the use of fermented liquors the capacity for prolonged endurance of mental or bodily labor, and for resisting the extremes of heat and cold, as well as other depressing agencies, is *diminished* rather than increased by their habitual employment."

The history of the Arctic explorations corroborates the same view. Those who used alcoholic spirits in the hope of keeping up the fire in the system were the *first* to suffer and *die* from the effects of the extreme temperature of the polar regions. On the other hand, those who used milk instead of alcoholic spirits endured the extreme temperature of these regions without the loss of life or limb. The explanation is easy. Those who employed the use of alcoholic spirits *diminished* the *temperature* of the body thereby, and likewise the *power* of *resistance* to cold. Those who used milk, thereby *increased* the *caloric* of the system, and likewise their power of *resistance* to cold and exposure.

It being true, then, that alcohol is paralyzing instead of stimulating to the nerve forces, and that its use results in a diminution of the temperature of the body, how frequently is this agent misapplied in the treatment of disease, prescribed (as a stimulant) under a misapprehension of its *true nature* and *action*? Take for example the following

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hypothetical case: The patient is seen lying in a semi-conscious state; countenance blanched; extremities cold; surface of the body bathed in a cold perspiration; pulse fluttering or intermittent; respiration hurried or labored; the patient nearly in a state of collapse. In such a condition we are generally directed to give *alcohol* as a *stimulant.* Now, in all candor, we ask, would the *indications* of *treatment* be met by the remedial action of this agent? Would not the *peril* of the patient be increased by its use? The effect of this agent would result in paralyzing still more the flagging energies of life, repressing nervous force, and diminishing in a still greater degree the temperature of the body, thereby throwing an additional obstacle in the way of a hopeful reaction. A *stimulant*, it is true, is indicated in such a state of the system—an agent that will increase nervous force and elevate the temperature of the body, in order to secure proper reaction; but in vain may we look for such results in the administration of alcohol.

Again, alcohol is not in any sense a FOOD, as believed by too many of the profession at the present day. As a drink, it is one of the most powerful antagonists of life. When pure it is a deadly poison. Dr. Percy, by experiment, found that when strong alcohol was injected into the stomach of dogs the animals would sometimes fall insensible to the ground *immediately* upon the completion of the injection, their respiratory and cardiac movements ceasing within two minutes, and that on *post-mortem* examinations the stomach was nearly empty, while the blood was highly charged with alcohol, thus rendering it almost certain that not merely the final *destruction* of nervous *power*, but the immediate loss of *sensibility*, was due to the action of *alcoholized blood* upon the *nervous centers* as a powerful irri-

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tant poison. When diluted, its pernicious effects are not so rapid, of course, but it is ever injurious to health. Such, however, would not be the case if alcohol were susceptible of being used as food, as advocated by Prof. Wood and others.

The able and recent researches of Dr. E. Smith, M. M. Lallemand, Duray, and Perrin, have positively proved that alcohol is not in any case a food; that it is neither transformed nor destroyed within the organism. It does not assimilate; it passes out of the stomach in the same condition in which it entered it. It is rapidly absorbed, and shows itself in the breath, perspiration, bile, urine, liquors of serous cavities, liver, and the blood, and is especially abundant in the brain ventricles.

Dr. Ogston in one instance, on *post-mortem*, found about four ounces of fluid in the ventricles of the brain, having all the physical qualities of alcohol; and in another, while heating over a candle three or four drachms of urine taken from the bladder of a man who was drowned while intoxicated, he observed that its vapor was set on fire by the flame. (*Brit. and For. Med.—Chir. Rev. July*, 1855.

Thus it is seen that alcohol rapidly passes through the system and out again with the secretions, as a foreign substance, or accumulates in the serous cavities, having undergone no change whatever—it is still alcohol. A small part may be retained in the blood, which it thins and weakens. Not being susceptible of assimilation, it can not impart any strength or vigor to *muscle* or *nerve*, but on the other hand impairs the energies of both, as has before been shown.

But Prof. Wood, in his Therapeutics, takes an opposite view of this question, and argues that alcohol is a *food, because* those who use *wine* and *malt liquors* require less other food, and that the *weight* of the body is increased thereby.

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The Professor fails to note a very important distinction which is necessary to be drawn. It is this:

It must be remembered that those liquors contain, besides the 5 to 20 per cent of alcohol, other ingredients, or elements, which may be more or less nutrient in their character—such as mucilaginous, gummy, and extractive matters, sugar, gluten of the malt; a bitter principle of the hop; the bitartrate of potassa, malic, tartaric, tannic, lactic, and carbonic acids. These *may* undergo digestion or transformation, and to a limited extent serve the purposes of the system. But there is *no evidence whatever* that the *alcohol* they contain is either *transformed* or *assimilated*, or that it in *any degree* increases the *strength* or *weight* of the body.

Food is that which repairs some waste or supplies some want of the system. We can repair that only which exists in part or in whole, or replace that which is worn out and passing off as effete matter. Now, in the human body there are water, fat, starch, sugar, nitrogenous substances, iron, sulphur, phosphorous, animal quinia, sodium, potassium, chlorine, lime, &c. But no *alcohol* is found. It has no *analogue* in the human system, hence there is nothing which it can repair; and being no *power* of a chemical character to *decompose* it in the system, it can not be appropriated in the repair of wasted tissue, or aid in the formation of new. I repeat, therefore, that *alcohol* is not in any sense a food. It is antagonistic to *health* and *life*, just in proportion to the amount used. The presence of *alcohol* in the blood is that of a *poison* instead of a *nutrient; weakening* and *thinning* that fluid, and, through the medium of the circulation is conveyed to the *nerve-centers*, which it influences, either by *perverting, suspending*, or *paralyzing* NERVE FORCE, and thus rendering the brain incapable of ministering to mental operations; perverting all the intellectual functions just in

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proportion to the amount ingested. These disastrous consequences of *alcoholic poisoning*, both to mind and body, and *even to life itself*, are *probably* due to the action of that narcotic in *checking*, or entirely *suspending* the GENERATION of *nerve force* in the GRAY CELLS of the *brain* and *spine*.

That alcohol has its place as a Therapeutic agent is a fact that none will probably deny. That it is often prescribed as a *stimulant* under a *misapprehension* of its true *nature* and *action* is *equally true*; and when prescribed as *food*, or as a *heat-producing* agent, a great mistake is certainly made.

RECAPITULATION.

NEGATIVELY CONSIDERED:

1st. Alcohol is not a stimulant, proper.

2d. It does not increase nervous force, nor excite *vital action*.

3d. It does not increase the *temperature* of the body; or in other words, it is not a *heat-producing* agent.

4th. It is not in any sense a food; can not be assimilated.

AFFIRMATIVELY:

1st. Alcohol is a narcotico-irritant poison.

2d. It is antagonistic to health and life.

3d. It weakens and thins the blood.

4th. It diminishes the caloric of the human body.

5th. It represses nervous force and lessens muscular power.

6th. It impairs the mind and weakens and perverts all the intellectual functions.

7th. It *kills* precisely in the same way that opium does.

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THE TREATMENT OF CHRONIC NASAL CATARRH.

BY

Jas. T. Whittaker, M. D.,

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The Treatment of Chronic Nasal Catarrh.

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What I have to say upon this subject pertains to the simple catarrh of the nasal mucous membrane. I have nothing to do with polypi, with ozena, with caries or necrosis of bone, with ulceration either of the mucous membrane or of its subjacent cartilage. I have a few practical remarks to offer upon the treatment of that most common, most distressing, and most obstinate of the petty annoyances to which flesh is heir, known in nosology as simple chronic nasal catarrh.

I do not stop to detail the symptoms of this affection. The personal and professional experience of every practitioner renders it superfluous. It is justly characterized as one of the opprobria of medicine. Niemeyer, who writes for us a classical chapter about it, says of it, page 292, "Chronic catarrh of the nose is an extremely obstinate disorder, often defying all treatment, and continuing for years with varying intensity." "Refractory" is the term applied to it in the surgical works to which we must turn for any-

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thing like a full description of its character and course. The fact itself, that the purely medical works, however volumnious, Aitkens, Reynolds System, for instance, do not speak of it but consign it to surgery, is very significant.

Hence it is not necessary to dwell upon constitutional treatment. I dismiss it here with a word, syphilis requires mercury or potash; scrofula or phthisis, cod-liver oil, iodine, iron; scurvy, vegetables. To most of my cases not complicated with any of these conditions I have administered arsenic on the strength of Ringer's encomiums as to its affinity for the mucous membranes in disease. I am only reflecting the general sentiment of the profession in the remark that but little faith is to be pinned to the efficacy of constitutional treatment alone.

Topical applications are the *sine qua non*. The great point in treatment is to reach the seat of disease. The nasal douche is a failure in this regard. It is a most excellent means of cleansing the cavities, the most excellent, in truth, but beyond that it is impotent. The only solutions which should ever be employed are of salt, or of phosphate of soda or ammonia. After having tried all forms of medication in this way I have returned to the simple salt. The iodine and astringent solutions only cause pain, epiphora, and strangling, during which accident there is danger of penetration to the middle ear. Roosa has already reported sixteen cases of this kind. It is a safe statement in nasal therapy that whatever causes pain does harm. These remarks apply with equal force to all the varieties of spray-producers for the posterior nares or the nasal passages themselves. Beyond their cleansing action, they are mere playthings.

Snuffs can only be exceptionally of service. In the rule they, too, irritate and are soon abandoned. Trousseau's

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laudation of the mercurial snuffs must have been based upon the fact that the most of his cases were of specific origin.

Inhalations of volatile substances, as of ammonia, iodine, alcohol, carbolic acid, etc., efficacious as they are, at times, in acute cases, are of no service, in the rule, in chronic catarrh. Theoretically, solutions of quinine and carbolic acid would be the most potent agents of this class upon the ground of a parasitic nature of the disease. But whatever parasites may have had to do with the inception of the disease, when the case becomes chronic it is with consecutive lesions, that is, with changes in the mucous membrane itself, we have to deal.

What are these changes?

Chiefly thickening of this tissue from rapid cell-proliferation and blood-vessel distension. The pituitary mucous membrane, that is, the Schneiderian membrane proper as distinct from the locus luteus, the olfactory membrane of Max Schultze, differs from all other mucous membranes in containing within it large plexuses of veins. Kolliker, it was, who discovered this fact, and in announcing it he disclosed, it seems to me, the only rational treatment of nasal catarrh, namely, compression of the thickened membrane. All authors are agreed that the thickening of the membrane in chronic catarrh is mostly, though not unexceptionally, limited to the inferior meatus and the inferior turbinated bone. Nelaton (Holmes' Surgery, vol. iii., p. 203,) excised a portion of the turbinated bone in an aggravated case of this kind with relief of the symptoms. This was rather a radical procedure.

Every one is familiar with the absorptive changes effected by steady continued pressure. The occulist opens up the nasal duct in this way or dissipates small tumors about

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the lids. The aurist employs it with really marvelous results, in some cases, in his compression of the walls of the middle ear by inflation and condensation of the air. The dentist removes with it deformities in the mouth. The surgeon uses it in stricture of the urethra, stenoses of all tubular structures in reach, œsophagus, rectum, etc. He paints collodion over adenomata. He straps tissues with plaster and sheet-lead. He lays a brick over a bubo. In obstetrics and gynæcology every one is familiar with the role it plays.

Two months ago I commenced the pressure treatment in cases of chronic catarrh. I have had in all five cases, two adults, two boys, one infant. One adult, the two boys, and the infant have perfectly recovered—how permanently I can not say as yet. I have now but one case under treatment, and in this case the swelling never was a feature of any importance. I could pass the Eustachian tube of medium size from the start. It is a case characterized by extreme sensibility of the mucous surface, profuse discharge, and total loss of smell.

The history of one of the boys will explain the treatment and its results.

Daniel N——, æt. 15, lymphatico-sanguine temperament, presented himself for treatment toward the close of last February. He had been afflicted with nasal catarrh for several years, during which time he had been under every variety of treatment at home and abroad. The nose was stuffed to that degree that he had to breathe with open mouth day and night. His voice, at one time clear and distinct, was now marred with the disagreeable nasal twang. The discharge from the nose was so profuse that he fairly saturated half a dozen handkerchiefs a day. He was continually snuffing and hawking, so that his mere

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presence became a distress to those in constant association with him. The continued accumulation of mucus during the night nauseated him to that degree in the morning that he would vomit his breakfast every day. The nose was stuffed to distention, almost distortion, by the thickened mucous membrane.

I was unable at first to introduce into the left nostril the finest silver probe. At the end of three days this instrument could be readily carried to the pharynx. I then commenced dilatation with small silver tubes of gradually increasing size, substituting them later with gum-elastic bougies. I had them made with spear points, with the lower edge thicker than the upper, that they might conform thus more accurately to the natural shape of the bony canal. The whole surface of the point was then thickly coated with an ointment of tannic acid and cold cream, in the proportion of half a drachm to the ounce. I need scarcely mention the extreme delicacy of manipulation as a constant requisite to success. When once fairly entered into the most constricted portion of the meatus, opposite the infeior turbinated bone, they were permitted to remain there from five to fifteen minutes. This treatment was steadily continued for ten weeks.

By the end of the fourth week, the disagreeable features began to subside. He could now breathe through the nose. It was noticed that he slept with his mouth closed. The nasal mucus diminished in quantity and assumed its normal characters in quality. His voice resumed its natural tone. At the end of the eighth week the canals were widely opened, and all the disagreeable symptoms mentioned had totally disapeared. The treatment was continued now for nearly two weeks longer, when it was entirely

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ceased. At various times during treatment he was put upon cod-liver oil, sirup of the iodide of iron, iodide of potassium, and arsenic. That the cure is not to be ascribed to the constitutional treatment is well proved from the fact that all these remedies had been tried in vain before topical treatment was commenced.

The second patient that presented for treatment was a medical student by the name of Paine, who had been afflicted with catarrh, with all its usual symptoms, for three years. This case differed in no regard from the first except that the nasal passages were not nearly so much occluded. I could pass the Eustachian catheter from the start. In two weeks the largest sized spear-pointed bougie entered easily, and as all the symptoms had disappeared local treatment was discontinued. As a phthisical diathesis was marked in this case, he was directed to continue with his constitutional treatment as well as local applications to the pharynx and larynx in relief of the more obstinate chronic inflammations affecting these organs.*

The infant mentioned was a dispensary case. It was a child with well marked scrofulosis or inherited syphilis. There was eczema of the scalp and forehead, congenital cataract, enlarged cervical glands, sunken bridge of the nose, total occlusion of the nostrils. The child was fed upon cod-liver oil in which a drop or two of the sirup of the iodide of iron was given at each dose. The bichloride of mercury 1–32d of a grain was injected subcutaneously every other day. Tar and cod-liver oil were alternated during the day and night in treatment of the scalp and cutaneous eczema. Tincture of iodine, and over it collodion,

*At the close of the session I was informed by Dr. T. Curtis Smith, Mr. Paine's preceptor, that there had been no return of the nasal catarrh up to that time, some three or four weeks after the cessation of treatment.

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was painted on the glands. My colleague, Dr. Seely, operated upon its eyes. I now commenced treatment of the nose. So soon as I could enter the point of a probe, I slipped in fine uterine sponge-tents. They dilated the nostrils in twenty-four hours to their full extent. I then commenced the introduction of metal rods, the well known cervical dilators of Peaslee, provided with a bulb some two inches from the extremity. The tannic acid ointment was always used. In ten days the finest dilator passed without the least difficulty, when, as all the nasal symptoms disappeared, this treatment was discontinued.

In the case now under treatment I have been compelled to use an ointment of morphia four grains to the drachm to allay the extreme sensitiveness. So soon as tolerance shall have been established and the acuteness of the inflammation shall have subsided I propose to pass the galvanic current through the nose to restore the lost sense of smell. Quite an array of cases are now on record showing the power of galvanism in completely curing anosmia of even years' standing.*

It may be considered as somewhat surprising that a treatment so simple and at the same time so efficacious had not been adopted long ago. I discover in fact that the principle underlying this method described really had its advocates among the ingenious surgeons of modern times.

Thus Nelaton (Elemens de Pathologie Chirurgicale, vol. 4, p. 680) states that Ledran had long ago practiced the

*This case has also markedly improved during the three weeks of treatment. The discharge is now almost checked. I have used the citrine ointment more extensively in this case on the recommendation of Prof. Seely, who believes "it will cure any disease of mucous membrane with which it may be brought in contact." The galvanic treatment is just commenced.

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method by passing through catgut strings of larger and larger caliber and finally by using flexible canulæ of various sizes. Trosseau says that Cazenave of Bordeaux had also devised instruments to operate in the same way.

Cohen in his late work of Diseases of the Throat, New York, 1872, remarks (p. 265), "In cases of exceeding obstinacy, and which can not be cured in this way, freedom of nasal respiration may be secured by the introduction of silver tubes through the nostrils, connected in front, so as to prevent their falling into the pharynx. These may be worn over night, to keep the nostrils patulous and to promote retraction of tissue."

These were the means defective in construction or only intended, as in the former case, for palliation hitherto employed in this way. The treatment by direct dilatation and compression lays claim to superiority in its simplicity of execution and efficacy of action over all other methods yet devised.

Simple chronic nasal catarrh is a disease without any mortality list. It is attended with little or no positive pain. Consequently its therapy is too lightly considered in the profession. Yet a neglected case does lead in exceptional cases to the gravest disturbances of nutrition and oftener than exceptionally to positive disfigurations. It is always attended by loss of the sense of smell and great impairment if not total loss of the sense of taste. It always impedes and in aggravated cases totally arrests respiration through the nose. If for no other reason than this it should receive more attention, namely, in that charlatanism feeds upon it like a fungus in all our larger cities.

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Treatment of Cataract.

BY

W. W. SEELY, A. M., M. D.,

Prof. of Diseases of the Eye and Ear, in the Medical College of Ohio.

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No one probably at the present day will take any exceptions to the two following propositions:

1. That the only kind of interference from art in the so-called senile cataract, is surgical.

2. That the only surgical interference is for the removal of the cataractous lens by the so-called method of extraction.

The question of the day is, then, What form of extraction is the best?

It will hardly be suspected that the question has received a solution as yet, and probably all that will be expected from my report will be some remarks upon extractions in general, with a few considerations upon the most credited forms along with what views I may have upon the question.

The treatment of cataract is one of the most interesting questions that ophthalmic surgeons have to do with, and it would be only natural to expect to find the results of a vast

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number of earnest laborers. That wonderful improvement has been effected in late years no one will deny.

THE FIRST ADVANCE.

The first great advance was in the substitution (modern) of the so-called flap-extraction for the needle operations, thus reducing the losses at least fifty per cent, taking the poorest statistics of the flap-method. The old corneal flap —by which I mean that made entirely in the cornea, without an iridectomy, by the broad lance-knife,—was, then, a most reputable operation, and one whose ancient respectability still commands the respect of some operators, neglected by the majority; yet even those, I think, are not unwilling to say of it, "though sinning it was sinned against.

DISADVANTAGES OF THE CORNEAL FLAP.

The great faults of the corneal flap were the large percentage of total suppurations of the cornea, iritis, and the tedious after-treatment. Inasmuch as the flap suffered so frequently, and as this flap was in the cornea, the inference followed that corneal wounds were unfavorable.

Again: as iritus was frequent, producing blocking of the pupil, this tendency must be subdued.

We find the first step to overcome these drawbacks, taken in 1862 by the removal two weeks previous to the extraction, of a portion of the iris corresponding with the point of incision for the extraction (Mooren).

The author claimed for this preliminary operation, that the chief dangers of the flap-method were, part modified, part almost entirely removed, namely, at least that the de-

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fined suppuration of the cornea was modified, the iritis almost entirely prevented. Two operations were thus substituted for one, a double shock was given the patient, certainly a serious objection to the method.

Shortly after this (1863) a striking theory was advanced in regard to the position of the incision, namely, that a scleral wound healed more kindly than a corneal one, and a method was proposed to avoid not only the double operation just mentioned, but also the risks of the corneal flap, namely, that with an incision downward through the sclero-corneal junction with a simultaneous iridectomy (Jacobson).

Among the objections to this operation might be mentioned, bad optical effect, and difficulty in removing a portion of the iris after the support of the lens is gone.

In 1865, two methods almost identical, differing in character from the preceding, (whose prototype, however, appeared very bunglingly in 1861, Schuft,) were brought out.

The incision was above with a broad lance-knife, an iridectomy, laceration of the capsule, then—that which was the characteristic feature—bringing the lens out by passing a scoop behind it, an *instrumental delivery*, the so-called "scoop-method" (Bowman and Critchett).

While the "scoop-method" emanated from high authority, it violated a, to me, foundation principle, the introduction into the eye of as few instruments as possible.

THE POINT OF DIFFERENCE BETWEEN THESE METHODS AND THE FLAP-METHOD.

If these operations be regarded as a whole, it will be seen that they differ from the flap-method, in the location of the

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wound, and in having the incision accompanied or preceded, remotely or immediately, by an iridectomy.

The statistics afforded by these various departures from the old method, were not a little encouraging; still, the proportion of losses and imperfect results left much to be desired.

FURTHER ADVANCE.

In the same year with the "scoop-method" (1865), the first results of an entirely new operation were reported at the congress in Heidelberg.

The chief general claims for the method were, that without the disadvantages, it combined the advantages of the preceding methods, supported by the fact that in reality all the preceding modes had been originally tested by the author and abandoned for this one.

In this operation we find the incision described as being in the sclera, combined with an iridectomy, the wound being made by an exceeding narrow and delicate knife. The method was termed the "modified linear extraction," but after a little further study and trial, it was called "peripheric linear extraction" (von Graefe). After nearly 400 trials by the author, we receive the most striking statistics. Such a brilliant record, the author claimed, should establish the claims of the method to be substituted for the flap operation. Over this proposition, some may be aware, was waged a fierce contest between the author and Prof. v. Hasner of Prag, the great advocate for the flap-method, as well as the great opponent of iridectomy, as the following brief extract from one of his communications will show:

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"Jede Cataract-operation, welche die Iridectomie zum Principe erhebt, ist ein entschiedener Ruckschritt." The claims for the "peripheric linear"—as we shall now term it—were vast.

Greater perfection not only as regards the location, but also as to the character of the incision, its position in the sclera causing it to heal better, and allowing the spontaneous escape of the lens in the manner desired, the linearity of the incision rendering the wound less liable to gape.

Increased facilities for laceration of the capsule, a point on which the greatest stress was laid, and perfect removal of all particles of the lens.

By the iridectomy there was less liability to suppuration of the cornea, and almost entire immunity from iritis from whatever causes. The special and peculiar form of the knife, and finally the adaptability of the operation to all conditions of the eye and patient, with marked simplicity of after-treatment.

These claims (among others) along with the statistics were quite enough, with the weight of the author's authority, to arrest the attention of operators throughout the world.

To overcome the same difficulties alluded to as attending the flap-operation, namely, suppuration of the cornea, and the irritation of the iris from the remainders of the lens, we find an operation proposed in 1864 for the removal, through sclerotic section, of the entire lens system (the lens with its capsule) (Pagenstecher).

The author of this method claimed that of the non-successes of the old operation more than one half depended upon suppuration of the flap, the remainder, to iritis, to detachment of the retina (rarely), internal hemorrhage, purulent hyalitis, etc.

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The wound was claimed to be made entirely in the sclerotic, and, after an iridectomy, a scoop was passed behind the lens, and the lens, with its capsule, removed.

The controling ideas of this method, as will be seen, were the greater faith in the healing of sclerotic wounds and the absolute avoidance of iritis from particles of lens substance remaining behind.

The author also had further ideas in regard to the action of the lens particles upon the iris, that their action was chemical as well as mechanical, and that the capsule remaining in the eye might cause what he termed "organic vegetative" (vegetative-organisch) irritation.

Without any intention of detracting from the author's genius, we may remark that the extraction of the lens with its capsule was made as far back as 1773.

The fact that the lips of the wound in the corneal flap were so liable to gape and thus render suppuration easy, we may not be surprised to hear of a method, with the following as its distinguishing point: "the closing of the wound in the cornea by means of a suture after the flap-operation" (Williams, Boston).

In nearly one hundred cases, the author had seen no unfavorable result from the employment of the suture. The author asserts that, "other things being equal, there can be no doubt that the farther the cicatrix of the incision can be removed from the ciliary region and the anterior of the choroid and retina, the greater the chance of ultimate safety, as these delicate tissues will be less implicated in any subsequent contraction. He continues:

"The advantages of the corneal flap-extraction may be much enhanced, and its dangers materially lessened, in my judgment, *by the use of a suture to retain in apposition the edges of the wound.*

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We will make a few extracts from the 32 aphorisms laid down by the author of another method (Kuchler):

Aphorism 3. In surgery as in life, the straight road is the shortest and best to reach the goal. The roundabout way is only to be taken when the straight way is beset with dangers.

4. There is no dangerous obstacle to the escape of the crystalline lens through the straight way.

6. The incision in the horizontal diameter of the cornea is of all the straight roads the one that gives the largest opening.

10. The periphery of the cornea possesses no more chances for the healing of the wound than the central part.

20. The small cicatrices before the pupil only act as cracks in glasses. They scarcely produce any trouble in the field of vision and no general trouble in the way of distinct vision, either near or distant.

The next method (not chronologically) differs in important particulars from any of the operations mentioned. The steps of the operation are as follows:

"The puncture and counter-puncture are to be made in the sclerotic about one millimeter beyond the cornea; the whole remaining incision is to pass, with a very slight curve through the cornea, so that the center of it is about two millimeters distant from its margin. This incision may be made upward or downward, with or without an iridectomy, and the lens may be removed through it with or without its capsule" (Liebreich).

From the prominent position of this method to-day, we will state the author's grounds for setting it forth and the advantages claimed for it.

The author's unstisfactory results by the so-called Graefe method, over the old flap, were attributed "to the peripheric

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position of the incision." He says: "This peripheric position is,

"1. The reason why it is impossible to remove the lens without iridectomy.

"2. That the excision of the iris is to be large and extensive, else it causes too great an inclination to prolapse of the iris.

"3. That it is necessary to perform the operation above, so as to cover a part of the large pupil by the upper eyelid."

The removal of the lens upward is by far more difficult, on account of the tendency of the eye to escape upward; and consequently,

"4. During the whole operation the eye has to be kept open by the speculum, and to be drawn downward by the forceps. This is not only painful and injurious to the eye itself, but causes,

"5. Not unfrequently prolapse of the vitreous body, to which a peripheral incision itself already tends."

Prolapse of the vitreous body and hemorrhage into the anterior chamber are the chief impediments to a careful removal of all the debris of the lens, and cause,

"6. Those grave forms of iritis which are sustained by the permanent irritation caused by the tumefied remainders of the lens behind the iris."

The advantages claimed by the author, after more than 300 operations, are,

1. It is undoubtedly of all methods the simplest and least painful. (The incision of the cornea is made with the smallest possible Graefe's knife, after the manner I have stated. The extraction is made downward without iredectomy, without narcosis, assistance, elevation, or fixation; only two instruments being needed, a Graefe knife, and a cystotome with a spoon on the opposite end.)

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2. It is unconditionally the easiest to perform, and requires the least practice.

3. It is preferable to the flap-extraction on account of the safer and constantly regular incision. The flap-incision scarcely ever acquires the regularity which may theoretically be demanded—even if made by the most practiced operator, with the best assistance, the most enduring patient, or under chloroform—by the use of elevator and fixation instruments. Now its height or breadth is not what it is intended to be; now its position is incorrect, or the wound irregular—indeed, part of it is due to the difficult form of the incision; but by far the greater part, according to my conviction, is due to the mechanism by which the cuneiform cataract-knife is to make the incision. The incision I designed can easily be made, in giving it in every case exactly the desired form and position—even if the patient is very restless—without assistance, without elevator and fixation. It mainly depends on the facility with which the place of contrapuncture can be chosen, the knife drawn back and made to pierce at another point if a mistake is made in the selection of the place for contrapuncture, and in the freedom with which, in terminating the incision, the inclination of the knife can be changed, if necessary. A little practice will enable every operator to avoid these corrections, and to make the contrapuncture, as well as the whole incision, correctly to his original plan, without subsequent alterations.

4. Against Graefe's method it has the advantage of a more favorable position of the field for the operation, and avoids, through it, all the inconveniences to which I have referred, as arising out of the peripheral position of the wound.

5. In regard to the mode of healing, it favorably con-

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trasts, like Graefe's method, with the flap-extraction, on account of the diminished influence which age, constitution, general state of health, season, and other causes exert; also on account of the less demand made upon the patient to remain quiet after the operation; and above all, on account of the lesser tendency to suppuration of the cornea.

6. The advantages of my method over that of Graefe are shown by the ultimate results obtained—by not showing a greater percentage of total suppuration than in Graefe's method, my best results are, in regard to optical and (if I may use the term) anatomical perfection, identical with the best results obtained in flap-extraction.

For a series of years an operation similar to the one described, has been used by two other individuals, and is termed the "small median flap."

The section of the cornea is curvilinear, midway between its center and its upper margin (Warlomont and LeBrun).

The various methods mentioned (a vast number has been passed over) will at least illustrate the attention commanded by the question.

They certainly show that some want of harmony still exists.

Probably one of the chief causes for the origin of so many "new methods" is the endeavor of each operator to overcome those adverse occurrences met with in his own experience, and probably one of the causes of a failure of his method, of a more general recognition, is in the identity of experience on the part of others in his difficulties.

One of the chief dangers in the flap-method was suppuration of the cornea.

The wound was one poorly adapted for healing, and a peripheric linear one was mathematically the best for all

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purposes in cataract extraction according to Prof. Graefe, and as it was impossible to make such a one with the broad lance-knife, we find ourselves with the delicate narrow one, now almost universally adopted, not only for cataract, but for other purposes. Investigations have shown (Schweigger) that the theory in regard to the scleral character of wounds in cataract operations, favoring healing, is untenable, for in the first place the incision at best is chiefly in the cornea.

This opened the door for license in selecting the zone for the incision. And just as Prof. Graefe himself receded from his first position near the sclero-corneal junction to a point nearer the cornea, just so, I fancy, many others have receded still more and have ended up in the cornea, and found no additional risks from suppuration. Thus it seems to me the great stress upon the location of the wound has been relieved, so far at least as regards the dangers in a certain tissue go. Not so perhaps in facilities for completing the extraction and obviating other dangers.

From my own experience and the results of operations seen in the hands of others, I would at present locate the chief danger to the eye, in iritis; and in the capsular cataract, the great drawback to good primary optical results. With the introduction of the Graefe operation I was particularly struck with the opportunity for bringing about good primary results, from the ease with which the capsule could be removed. My own experience seems to teach me to look to particles of lens substance as the great cause of iritis, and certainly ordinarily the cause of these particles remaining, is the imperfect destruction of the anterior capsule. The large iridectomy above permits of the most thorough and complete laceration of the capsule. One of the very last instructions from Prof. Graefe was in regard

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to getting rid of the capsule. There can be no question but one of the chief sources of success by this prince of operators was the complete and infinitely careful manner in which he removed all particles of the lens. There is no one certainly who was so fortunate as to have seen him operate by his new method, but carries an indelible picture of that scene of care, no result being satisfactory until the pupil was free. Then this, from the illustrious example, is one of the points I would call attention to. I can not but feel that those who fail to avail themselves of the opportunity afforded by a large iridectomy for thoroughly and completely lacerating the capsule, make a mistake in performing an iridectomy.

I speak thus strongly, from having had an operator, and a distinguished one too, marshal a row of patients before me whose capsular cataracts could be seen at a distance, and triumphantly exclaim, "Behold the results of the Graefe operation!" They were good eyes to improve vision in, but poor ones as primary results. This same gentleman's criticism on Graefe's primary results was, "I don't believe him." It might seem absurd for me to remark, that the simple removal of the lens and the production of perfect vision are not necessarily synonomous.

VALUE OF AN IRIDECTOMY.

The question as to the value of an iridectomy in fortifying the iris against inflammation and its modifying influence over defined suppuration of the cornea does not seem to me to be settled. Possibly the fact that it is, as it has been termed, a "mutilation" and also the natural feeling that optically a circular pupil is the best, as yet enter too strongly in the question for a calm consideration. Statistics

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show that optically, the iridectomied eye is about as good as the non-iridectomied. There is no question but that the steps necessary for good results will always be difficult for many to take. And any unprejudiced person will confess that compliance with all the rules laid down by Professor Graefe for perfecting an iridectomy, especially upward, is not easy. Probably, then, an operation that will admit of an easy exit of the lens without an iridectomy, will always be sought after by the majority of operators. Professor Liebreich's operation seems to promise well in this respect. His incision is so made that there is no tendency to gape, the chief cause for the unfavorable healing of the old flap-wound. It is far enough in the cornea for the edge of the lens to engage in it by slight tilting. No fixation instrument is required.

Statistics are still wanting to demonstrate its claims to a general recognition. Its simplicity is being very strongly urged, and it is to be hoped that its practical value will be commensurate with the theoretical claims. While my own experience has not been comparatively large, (only a little over 100 extractions), and though that experience has been singularly fortunate, I yet am able to see objections to the plan I have almost universally adopted, namely, the so-called Graefe method. My experience has given me only one case of corneal trouble, in which the eye was recorded "lost." (Even in this case there was perhaps a slight chance for an iridectomy). The suppuration was in no way attributed to the style of the operation, for the eye was submitted to after-treatment by the patient himself. Iritis has occurred but a few times (3). In these it was so controlled that no harm resulted. I attributed the cause to remains of the lens.

The chief obstacle to the removal of all the lens substance

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was in every instance *hemorrhage into the eye. In no case have I been compelled to resort to a needle operation.*

In the case of blocking of the pupil alluded to, the patient left without an operation. In two cases, among the very first, I had a slight escape of vitreous. In one case where one eye had undergone extraction, and in which the vitreous was found to be partially liquefied, I prepared the patient for a similar condition of things in the eye I was to operate upon. The operation was normal until I attempted to remove the lens which, having no support from behind, would drop down, and was only removed with difficulty, the liquefied vitreous escaping at every attempt. The patient, however, was able to read No. 8 Yaeger. (This eye, as well as the one first operated upon, became, after a few years, glaucomatous).

In two or three cases the patients tore the wound open several times within a week, and yet in each case No. 1 of Yaeger could be made out.

The large majority of my patients have been charity cases, and in but few have I had proper assistance. All have been able to make out print at least of No. 4 of Yaeger.

It must be borne in mind that every one is liable to have a long series of fortunate results, so while my luck has stood by me in over one hundred cases, giving me a degree of success certainly unexcelled when taken as a whole, I am by no means prepared to say that the steps I have taken, so far as the operation goes, are the easiest or the safest.

I have been particularly impressed with the fact, that while infinite discussion has been had in regard to "lines" and "millimetres," very little stress in articles published has been laid upon the after-treatment.

The rational after-treatment accompanying the "peri-

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pheric linear method," and the style of knife should be kept constantly in mind.

Professor v. Graefe has given the most minute account of this important feature.

For the majority of operators, it would be practically impossible to follow all his directions, as it would require skilled assistants.

The leading points I have already given to the profession in an article on the "after-treatment of cataract operations." Many times we are needlessly alarmed if we have been using atropine after the operation, especially in old persons with relaxed conjunctivæ. We find perhaps considerable chemosis and suspect inflammation and perhaps adopt energetic measures to resist it, while the entire difficulty is in the irritation caused by the atropia, to be readily relieved by omitting the wash and touching the conjunctiva lightly with the sulphate of copper, if the chemosis is considerable, otherwise by putting half a grain of sulphate of zinc in the atropine solution (*one ounce*). Many persons have an idiosyncracy to the use of atropine and morphine solutions, and it irritates the conjunctiva. The reaction after extraction generally occurs in the first twenty-four hours. It is wise never to trust much to the subjective sensations. Patients often do not know how *they feel*, and many are inclined constitutionally, to complain, many to be heroic.

A very slight opening of the lids will suffice usually to indicate the state of the eye.

An increased flow of tears, puffiness of the lids or haziness of the cornea demand attention. As soon as the symptoms of trouble present, to make the point strong—try to regard yourself as treating that condition of things, and *not a cataract operation.*

Diffuse and circumscribed suppuration of the cornea are

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especially to be feared during the first forty-eight hours. Of course if it is the diffuse form, the best that can be done is to relieve the pain, by poultices and opium internally. In suppuration of the cornea, Prof. Graefe relied specially upon painting the cutaneous surface of the lids with the compound stick (nitrate of silver and potass.), the compressive bandage and cathartic powders (calomel and rhubarb).

It is well to make hot applications in very feeble subjects, applying very hot water for twenty minutes at a time several times a day. If iritis sets in after four or five days, as it may, it can be treated in exactly the same manner as is recommended for other forms of iritis.

The bandage must usually be kept on for a week and then removed. However, in many cases the presence of the bandage seems to cause an irritation, and whenever such exists and I fail to find any special cause, I remove the bandage. Many patients can be discharged within a week, but the average length of time is two weeks.

This is a point that should be borne in mind, since physicians frequently either do not tell their patients, who they send for an operation, how long they must remain, or what is worse, tell them it will only require a few days.

I can not end my remarks without earnestly protesting against the practice, in general, of confining eye patients in the dark. All nature cries out against it. Cataract patients with their eyes bandaged do not know whether it is light or dark. During the examination of the eyes, and when we begin to omit the bandage, care should be taken to reduce the light.

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CASEOUS PNEUMONIA,

IN ITS RELATIONSHIP TO

TUBERCULOSIS.

BY

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Caseous Pneumonia in its relationship to Tuberculosis.

BY

A. T. KEYT, M. D.,

CINCINNATI, OHIO.

We have prepared in our way a paper on the difficult subject of the pathological relation between caseous pneumonia and miliary tuberculosis. Without pretension of experience as a practical pathologist, we have taken facts, the common stock of the profession, with them the more recent views, and have framed them into our argument. A peculiarity of the paper is the dearth it betrays of reference to authority, except in the instance of one name which very frequently appears. This is for the sake of simplicity of treatment, and to avoid the vortex of names into which we otherwise should be led. We have chosen to follow chiefly Rindfleisch as the exponent of the new pathology, and accordingly have quoted and epitomized largely from his text-book. We revere the facts of this renowned author, but venture to sometimes question his theory. Thus prefacing, we arrive at the subject.

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Pulmonary phthisis may be defined anatomically as consolidation of portions of the lung parenchyma, followed by gradual disintegration of the consolidated parts. The nature, origin, tendencies, and consequences of these indurations comprehend the important questions in the pathology of the disease.

The consolidations are characterized as diffuse or nodular, or they present more frequently a combination of these forms.

The *diffuse consolidations* offer considerable variety of form and history. If we study "The Carnification and Gray Tubercular Infiltration, Chronic Hepatization, Red and Gray," of Laennec and Andral; "The Albuminous Pneumonic Solidification," of Dr. T. Adison; "The Cirrosis," of Dr. Corrigan; "The Fibroid Phthisis," of Dr. Andrew Clark; "The Inflammatory Phthinoplasms," with varieties according to the predominance of the corpuscular or fibroid element, of Dr. C. J. B. Williams; and, finally, the diffuse lobar and lobular inflammation, and other variously described conditions of Dr. Edward Rindfleisch, we will learn something of the forms and varieties of lesion under consideration.

After a severe conflict of opinion as to the question of the inflammatory origin or otherwise of these diffused consolidations,—a conflict in which the celebrated participants Andral and Broussais supported the affirmative, and Laennec and Louis the negative, and since them many other names well known in the annals of pathological investigation have been arrayed on one or the other side,—the question has finally come down to our time well accepted in favor of the immediate dependence of these conditions upon some form or degree of inflammatory action.

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These diffuse phthinoplasms constitute a very considerable part of the pathological anatomy of phthisis. They originate as primary lesions, and also as secondary to the nodular indurations. As the first, they are found of any extent from the size of a lobule to that of a lobe or the greater part of a lung; as the second, from the size of the zone which surrounds a single tubercle to the measure of the hepatization, which succeeds a general pulmonary tuberculosis.

The mechanism of their production is, probably, that under favoring conditions and the stimulus of inflammation there takes place uniformly and simultaneously an infiltration of all the tissues of the affected area with the material well characterized as caco-plastic. This infiltrate being incapable of resorption, or organization, or even of supporting a proper suppuration, and only tending to lower changes, forms with the involved parenchyma the homogeneous blocks under consideration.

In behavior they pass successively through the stages of degeneration and decay, occasioning therewith commensurate spoliation and destruction of the lung textures; for individual specimens present the downward gradations from the recent inflammatory congestion incapable of resolution, through the metamorphic states designated as reddish gray, gelatinous, yellowish white, &c., to the point of complete caseation; thence to softening followed by elimination through ulcerated openings into the bronchial tubes, leaving cavities small and great. These cavities behave, too, like other phthisical cavities, usually extending by a successive breaking down of the imperfect walls, sometimes becoming provided with a more complete lining membrane,

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and continuing as pus-secreting surfaces, and, exceptionally, contracting and healing. Here, also, occasionally are met with examples of the encapsuled condition, where circumscribed blocks, now cheesy, softened, or calcified, are found hedged in by a wall of well organized tissue, thus forming an efficient barrier against further evil effects from the imprisoned products.

The *fibroid* consolidation only serves to illustrate the pathology of phthisis when it certainly degenerates and tends to caseation and destruction of tissue. While its vitality, even its low estate, is maintained, or there is progress, however slow, toward resolution, it lacks the character of a phthisical product. Some of these productions indeed seem to occupy the border ground between pneumonic and phthinoplastic deposits, and become declared as one or the other, according as the vitality rises to the point of insuring their removal by resolution or stability by organization, or, on the other hand, sinks so low as to condemn them to caseation and its destructive consequences. Pathologically, the distinction between these transition cases can be made by the recognition or not of particles of matter already cheesy; clinically, their characters can not be determined until some considerable progress shall have been made in either direction. However, the gradually favorable progress will be more tardily manifested than the opposite, because in the latter the degenerative changes, producing as they do early destruction followed by elimination of portions of the pulmonary parenchyma, are in this wise distinctly manifested by the presence in the sputum of filaments of yellow elastic tissue as revealed by the microscope. And thus in a given case of so-called fibroid phthisis, so

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long as this positive sign of lung disintegration is absent from the expectoration, there is hope that resolution or organization of the product may yet take place; nor can the diagnosis of pneumonic phthisis or caseous pneumonia be safely made.

If permitted to venture a theory of the production and course of the fibroid induration, it would be: that originally it is pneumonic with an exudation largely plastic. When occurring as an independent affection it is pleuro-pneumonic and modified by the compression to which the affected lung is subjected in consequence of effusion into the pleural cavity. Thus circumstanced, chronicity is insured. When occurring as a consecutive affection complicating other phthisical processes its chronicity is likewise assured. Under favorable conditions, after remaining for a time apparently stationary, the vitality of the product is gradually raised by the endowment of a richer cell-life to the consummation of securing its slow dispersion. But under unfavorable conditions and the continuance of the appertaining low form of inflammatory action, the vitality of the product is diminished below the point at which repair is possible, mostly we may say, by the permeation of a new infiltrate whose cells are perishable; and thus begin the evolutions of decay and dissolution which inevitably stamp the product as now phthinoplastic.

The diffuse phthinoplasms, though as stated, frequently found as primary and principal lesions, exist probably always in some variety or other as complications of the other forms, and so occurring either precedent, or consecutive, the consequences are only all the more certainly and extensively ruinous. If they precede the nodular irruption,

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the soil is made rich for a quick and abundant development followed by rapid and lavish decay and destruction. Or if the diffuse supervene upon the nodular, they then go hand in hand, precipitate and widen the caseation and softening, the ulceration and destruction of tissues.

We have thus given this outline history of the diffuse indurations of phthisis because they constitute so large a part of the foundation of caseous pneumonia. We come now to give some account of the *nodular indurations.*

As is well known, these are designated by the old school of pathology as gray, semi-transparent, miliary tubercles, and as yellow, opaque, crude tubercles. By the new school the first form is designated as above with the additional appellative of *true* tubercles, and the second as the caseous products of catarrhal pneumonia or *pseudo*-tubercles.

As all are presumed to be familiar with the old pathology we will not dwell upon it, but merely use its teachings as seems necessary for the proper development of the subject. In the presentation of the new we shall make liberal use of Rindfleisch. He states, paragraph 113:

"Tubercle represents the third type of specific inflammation. * * * We call tubercle *par excellence*, singly and alone, a certain originally gray, translucent, very compact nodule, which is seldom larger than a millet-seed (miliary), but, however, is found in many, nay, in innumerable points together." In intimate structure they are composed chiefly of roundish cells of which the majority contain a single lustrous nucleus, the smaller number, two, three, or more of such nuclei. What remains of the tubercle after the cells are removed is a finely fibrous net-work.

As to how and where miliary tubercles are produced, our

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author says, paragraph 115: "We will expect from the beginning that in general the vascular and connective tissue systems must also be regarded as the origin of these new formations. There is, however, no connective tissue of the organism, as numerous observations have proved, so readily disposed to the formation of tubercle, as that which forms the adventitious coat of the smaller arteries and transition vessels." Also, paragraph 448: "The connective tissue of the lungs is the seat of these disseminated tubercles. In individual cases (Deichler) they are exclusively the sheaths of the small arteries and veins within which the miliary nodules have developed, more frequently the interlobular and infundibular connective tissue."

And in explanation of the observed partiality of tubercles for the neighborhood of lymph-vessels: "Meanwhile, however, it has been shown that the origin of miliary tubercle is by no means confined to the neighborhood of a blood-vessel, but only to the presence of an endothelium The endothelia of the lymph-vessels, the serous membranes, the blood-vessels (Schuppel), are the cells of the body by whose specific irritation is formed the most essential part of the miliary nodule, and from this only is derived the preference of miliary tubercle for this locality, that in fact the lymph-vessels also by preference take their course in the immediate surroundings, in the adventitious coat of the blood-vessels."

He accepts in the main the conclusion that the introduction of the "cheesy detritus" into the juices of the individual results in the occurrence of miliary tuberculosis, though he does not commit himself unreservedly to the doctrine, enunciated especially by Niemeyer, that miliary tubercles arise exclusively from this source.

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The idea of the constitutional origin and nature of miliary tubercles is thus expressed, paragraph 118: "This much is certain, that the formation of tubercle is the expression of a commenced dyscrasia, a corruption of the juices, which in many cases diffuses itself from a point throughout the organism; in others probably? is already congenital." Again, paragraph 447: "*Disseminated* tuberculosis is constantly the sign of a constitutional disease. * *"

In reference to crude or yellow tubercles, he regards them as the offspring of catarrhal broncho-pneumonia, acute or chronic. The cellular infiltrate filling the lumina of the alveoli and bronchial tubes is, or becomes, caseous. The catarrhal pneumonia he distinguishes from croupous, which latter terminates usually in resolution, whereas such favorable course of the catarrhal form is entirely exceptional. Occurring in the previously healthy this form of pneumonia gives rise to the same caseous infiltrate; and in its production any essential agency of a constitutional state is wholly ignored. The cells he denominates epithelial, and the extent of their secretion, proliferation, and dryness, in connection with the difficulty of exit from the lumina, is the explanation and the measure of the certainty, rapidity, and completeness of the cheesy metamorphosis. And thus the foundation of all this class of phthisical lesions so long recognized as tuberculous, is laid wholly in catarrhal inflammation of the bronchial and alveolur mucous membranes.

How much of this teaching can we adopt? It is easy to accept that miliary tubercles are developed primarily in the connective tissue, that they have the form, constitution, etc.,

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as described, and that they are the certain expression of a systemic contamination; but that miliary tuberculosis always or even generally results from the absorption of caseous matter, as the all-sufficient cause, in this broad intent we do not accept. Rather would we say that miliary tuberculosis very readily arises, and probably in all cases sufficiently prolonged does arise, when caseous deposits already exist.

Also, we accept that the ordinary caseous nodules are developed primarily in the lumina of the air-sacs and smaller bronchial tubes under the immediate agency of catarrhal inflammation of their mucous membrane; but that ordinary catarrhal pneumonia seldom eventuates in resolution, or when occurring in previously healthy subjects that it results in phthisical caseation, save possibly in rare instances of chronic course and engendered dyscrasia, we do not accept. We hold that the essential cause is behind the catarrh in the one form, and behind the connective tissue prolifera tion and any immediate local causation in the other; and, if we may here say it, that all the forms of phthinoplastic lesion—the diffuse phthinoplasms before considered, the catarrhal products, and the miliary tubercles—are but expressions of one and the same constitutional disease. This we are well aware is ancient doctrine, nevertheless, we trust, not weakened at all by age. Let us pursue further the pathology in illustration and evidence of this old, familiar, and, until very recent times, little questioned doctrine.

If we consider the relationships of the phthisical lesions, we will find that the pathological anatomy of the affected lungs usually affords evidence of the development and progress of all the forms of phthinoplastic product. Thus

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are found in the same lung recent and advanced catarrhal products, new and old miliary tubercles, and diffuse consolidations in different forms and stages of metamorphosis; and thus are found caseous depots whose original elements we can not distinguish, and cavities formed from we know not what. Where death has resulted from the progress of pulmonary phthisis the morbid anatomy will scarcely furnish an example of one of these forms presenting alone in its purity.

If we study the pathology from the stand-point of prior and consecutive changes, we see here between these forms a most intimate relationship. In the first place, miliary tuberculosis in the order as a primary affection is never found without the associated infiltrated parenchyma. A single tubercle presents the zone, and disseminated tubercles the corresponding area of diffuse infiltration. This secondary affection usually presents as a diffuse phthinoplasm, though evidence is not wanting of participation also of the mucous membrane and exudation into the lumina of material to form catarrhal nodules. The reason that the catarrhal nodules less plainly appear, lies in the fact that early death in these cases from systemic affection and interference with respiration does not give time for their fuller development; and in that other fact to which we hope yet again to refer, that the early stage of luminar deposits is so exceedingly like the miliary nodules that one form is readily mistaken for the other, and accordingly all pass for miliary tubercles. As authoritative confirmation of this statement of pathological sequence we refer to Rindfleisch. "The larger a nodule is," says he, paragraph 447, "so much the more may we accept that at the pheriphery of the real

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tubercle there exists a circumscribed zone of catarrhally inflamed parenchyma. * * * A catarrhal co-affection (paragraph 447) of the adjacent alveoli we do not perceive in our tubercles (Fig. 131, A); still I must point out that this is quite a common accident, and that by it the miliary tubercle frequently attains double the circumference. The combination of disseminated tuberculosis, with a diffuse, probably lobar catarrhal pneumonia, likewise occurs and allows the construction, that tuberculosis has acted here as the predisposing cause."

How closely allied these processes! How suggestive, at least, that the inflammatory reaction following so surely and quickly upon tuberculosis, and characterized especially in that the infiltrate non-absorbable, non-organizable, can only degenerate and decay, owes its essential origin to an agency more potent than mere local irritation of the tubercles.

In the next place, if we view the subject from the standpoint of primary caseous pneumonia or catarrhal process, it is easy enough to trace the sequence of miliary tuberculosis. The co-existence in the lungs of caseous depots and cavities with tubercles of more recent date is noticed by all pathologists. On this point Rindfleisch remarks, paragraph 450: "The final result of a large series of investigations directed singly to this point now is this, that only in a relatively small number of cases the miliary tubercalosis is actually entirely wanting."

And again, paragraph 915, beside the "pseudo-tuberculous" products: "If we only indefatigably seek we will meet with the specific new formation, either in the interstitial or parenchymatous connective tissue, upon the vessels, or at

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the pleura and its inflammatory efflorescences, or finally at the bronchial mucous membrane, probably in all cases, although not decidedly numerous."

And once more, paragraph 452, in the neighborhood of a larger cavity which occupies the apex of the lung our author meets with "an exceedingly great number of equal-sized and indeed real miliary nodules of very compact, springy, elastic consistence, and grayish, translucent coloring, whitish at the center," but concerning whose true character he betrays doubt and perplexity. However this may be, they are undoubtedly phthisical nodules, and serve well to illustrate the point that young tubercles constantly spring up in the vicinity of cheesy depots and cavities. How do we account for this, we may say, invariable succession? Not, we think, by the theory of Niemeyer, that tuberculosis originates in all cases singly and alone, from the absorption of cheesy detritus, but rather by the theory of a constitutional state which conditions, first, the cheesy inflammation, and next, the miliary irruption, the latter sequence favored, as may be, by the influence of a favorable soil and increasing blood dyscrasia.

If we now look at the picture of the disease in the lungs extending from the centers of decay, we see a most intimate blending and reciprocal relation of the forms and processes. Starting with the ever-present encircling inflammation, this yields an infiltrate partly interstitial, partly alveolar, which results in the formation, respectively, of diffuse, and nodular catarrhal indurations. The soil thus prepared is an inviting place for the development of miliary tubercles, and accordingly here, too, they are abundantly found. But these also in their turn become environed by

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new areas of inflammatory congestion which produce fresh phthinoplasms, and thus invasion and destruction go on, one process inviting, calling forth, and co-operating with the other, and all the phthinoplastic forms breaking down together.

In this connection there yet remains to be considered the idea of simultaneous development of these forms. The view is a reasonable deduction from the preceding relationships, for the sequences are traced in them through progressively shortening to inappreciable intervals. When the products are found side by side with nothing within or about them to show that one is newer or older than the other, it is just as philosophical to consider them of simu l taneous production. Hence we adduce in support of this view the familiar examples of blocks of indurated lung tissue, granular or diffuse with the more distinct miliary tubercles interspersing them or presenting in other parts, and where all that is seen gives no indication that one has preceded or followed the other, but rather the idea that both have arisen at the same time and then proceeded *pari passu* with each other.

A stronger example of simultaneousness of origin is presented in the composite tubercle, described by pathologists, where the two forms of product blend indistinguishably to form the gray nodule. This is a frequent occurrence, as testified by Rindfleisch, in the paragraph before quoted, where he speaks of "the catarrhal co-affection of the adjacent alveoli, by which the miliary tubercle attains double the circumference, as quite a common accident."

Bearing upon this point a most important fact has been brought out by the experiments on the artificial production

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of tubercles in the lower animals, conducted by Burdon Sanderson, namely, that the granulations found in the lungs consist of interstitial thickening of the alveolar walls blended with accumulated alveolar cells. The artificially-produced tubercle of animals, then, is as much an alveolar, as a connective tissue formation; and we must conclude that the agency which causes a proliferation, in points, of connective tissue-cells, gives rise at the same time to a proliferation of the alveolar cells, thus forming the common product, tubercle.

Of course if it be true that simultaneousness of origin obtains in frequency beyond mere coincidences, then the idea of a common cause must hold; which cause would not only originate the forms simultaneously, but also at different times, and this, too, without excluding or diminishing, but rather co-operating with and enhancing the influence of exciting causes as well as of the reciprocal causative relationships between the forms themselves.

The foregoing relationships of origin, sequence, and coincidence may now be followed by that as shown by a comparison of the products themselves. We have already had a description of the miliary tubercle. If we would have a specimen of the catarrhal body at a stage of development when alone its character can be justly studied, we will best find it in the lungs of children dead from phthisical broncho-pneumonia; and nowhere can be found so lucid a description of these appearances as the following by Rindfleisch: "Here upon the cut surface grayish translucent, whitish in the center, nodules, of the size of a poppy to a millet-seed, therefore really exceedingly similar to miliary

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tubercle, project; they feel compact, seldom stand singly, mostly in groups of five to ten, in such manner indeed that the center of the lobuli are principally occupied by these groups, while the pheriphery remains free. The frequent occurrence of a zone immediately surrounding the nodules, which harbors a grayish red, clear or slightly clouded, symvia-like, viscous infiltrate, the 'infiltration gelatineuse' of Laennec, is characteristic. * * * " The description thus far is an admirable one for miliary tubercles as well. The two pictures are strikingly alike; the nodules of the one in shape, size, consistence, coloring, whitish centers, distribution, surroundings, in all the same as the nodules of the other.

Of the microscopic structure of the early catarrhal nodule our author has failed to give us a satisfactory delineation. This is the more regretted because nowhere else either have we been able to find it. If allowed, however, to hypotheticate the microscopic characters from what we know of the constitution of the infiltrate from which the catarrhal nodule is formed, including the probable filimentation of the more plastic part, as appears more largely in croupous pneumonia, we would have its composition of cells and fine fibers very analogous, indeed, to those which compose the miliary tubercle. And if these alvelolar cells, as considered by some able pathologists, are something quite different from epithileal cells, or in truth, if they are connective tissue-cells, as held by Virchow and Dr. Wilson Fox, the analogy will all the better hold.

In further course the catarrhal and the miliary nodule behave alike in that they caseate from the central white spot toward the pheriphery, becoming in time wholly

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cheesy, when are obliterated whatever semblances may have existed of distinctive original appearances. These are close analogies; but what of the differences? They are determined by the original seat and the influence of inflammation. We have already accepted that miliary tubercles, when pure, arise in the connective tissue. It must be that the connective tissue of the lungs affords a nidus for these bodies, as well as that of other organs, yet it is well known that tuberculosis in its purity can not advantageously be studied in the lungs, and accordingly pathologists seek their specimens elsewhere, as in the peritoneum and membranes of the brain. The confusion encountered in the lungs seems due chiefly to the simultaneous or early subsequent development of catarrhal products, so that these or composite tubercles are quite as likely to come under observation; also partly, we may accept, to the fact that even in a pure example of one or the other, it is often difficult to determine which presents, inasmuch as the alveolar body pushes the walls outward so as to appear to occupy the interstitial tissue, and the connective tissue-body pushes the walls inward so as to appear to occupy the lumen.

Nevertheless there are differences in the rise and progress of these forms. The miliary nodule taking its rise as an overgrowth of the normal tissue—the adenoid, if you please,—and developed in its usual course, though appearing, as it may, in innumerable and widely disseminated points, is of itself a gradual development; nor does it suddenly and overwhelmingly invade, possess, and change the affected lung. In proportion as pneumonia is held in abeyance the points may go on developing for some time and the nutrition and function of the parenchyma be but slightly interfered

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with. However, in time, the nodules enlarge, encroach upon the intervening spaces, interrupt the circulation and respiration, touch each other, coalesce and form knots of variable but never very large size, caseate, soften, and destroy the tissues.

In contrast, the picture of the pneumonic process is that of an infiltrate suddenly poured out and filling in the affected region all the terminal air-cavities, abolishing at once their function—never again to be restored. The infiltrate speedily solidifying in the lumina, forms nodules as numerous and closely packed as the receptacles which contain them. Pressing upon the septa, they interfere with the nutrition and thus insure their own complete caseation, and cause the atrophy and obliteration of the septa themselves. Meantime, the nodules coalesce and form knots and masses often of very large size, which soon break down, involving the whole affected parenchyma in disorganization and destruction.

In proportion as these forms and processes approach a separate existence and course, will their history correspond with the above representations. But as already amply illustrated, the pathological history of phthisis does not in general present these distinctive processes; rather the impress of either appears, although the disease under such impress may run to a fatal termination in some cases before the subsequent process becomes well manifested.

In a review, then, of the relationship of the phthisical processes and products we find plainly developed:

1. Miliary tubercles at an early period of their production are followed invariably by pneumonic processes, with products that only degenerate.

2. Pneumonia, which produces an infiltrate incapable of absorption or organization, and doomed to caseation, is

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followed by miliary tuberculosis, certainly very frequently, probably in all cases sufficiently protracted.

3. Miliary tubercles and the degenerating pneumonic products, nodular or diffuse, arise not infrequently simultaneously, or at least in indistinguishable succession, and then progress coincidently with each other.

4. In the progress of phthisis the lesions are extended by the added agency of all the forms of phthinoplastic product, one preparing the way, favoring and co-operating with the other, and all, with the involved tissues, breaking down together.

5. Miliary tubercles and the early degenerating catarrhal products are themselves so exceedingly alike, combined with similarity of distribution, behavior, and surroundings, that there is great difficulty in determining which form is under observation; and the difficulty is further enhanced by the co-existence also of the two forms.

6. Whatever differences may be observed, they are determined by the difference of seat and the influence of inflammation; the miliary body being developed in the connective tissue apparently independent of, or at least less palpably, from inflammation; the catarrhal body, in the lumina of the air-sucs and bronchioles, plainly as the immediate result of inflammation of their mucous membrane; and in subsequent course the impress of a typical history approached and carried out by each in accordance with these modifying influences.

7. The general fact that when death has resulted from pulmonary phthisis, the lungs present examples of all the forms of phthinoplastic lesion, and the exceeding rarity of the case where one form alone is found, and if found, so readily explicable in that death took place before the others had time to become manifest.

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This statement of the sequences, coincidences, analogies, and relationships of the lesions of phthisis, though incomplete, yet so far as drawn entirely just, we sincerely believe shows the remarkable intimacy of their character and history, and affords to our mind a convincing argument that phethisis pulmonalis, notwithstanding its very considerable variety of expression and course, is essentially a *single* disease. In view of these facts, to us, there is no alternative but the conclusion that these lesions originate in common from, and represent but *one* potent constitutional affection. And hence, the division of the disease in accordance with more recent doctrine into tubercular and non-tubercular phethisis, or, in other words, into tuberculosis and caseous pneumonia, with the contradistinctive ideas attached to these terms, we can only regard as erroneous pathology.

The theory and views to which we are led from our study of the subject, and as harmonizing and best explaining all the facts, we state summarily, in conclusion:

Pulmonary phthisis is a constitutional disease with local manifestations in the lungs, and arising from a predisposition hereditary or acquired. The manifestations may be primarily in the form of miliary tubercles, or of catarrhal products, or of diffuse consolidations, or, as may happen, of a conjunction of these; but all are characterized alike in their proneness to degenerate and effect the destruction of the tissues. If the manifestation is primarily in the form of miliary tubercles the predisposition is strong and pneumonia in abeyance. If the manifestation is primarily in the form of catarrhal products, or diffuse phthinoplasms, inflammation has surprised, as it were, the tuberculosis and suddenly brought forth its extensive crop of degenerating products. If the manifestation is in the forms coincidently, the constitutional disease was fairly ripe to break forth in

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tuberculosis, just at the time inflammation set in to quicken and intensify the manifestation.

Herein is explained the ready succession of the forms of phthinoplastic deposit, not so much that the first causes the next, though not excluding such agency, as that the latter is a later production from the same constitutional cause. And thus is explained as alone can be, the simultaneous development of connective tissue and pneumonic products, when occurring more frequently than allowable for mere coincidences, that both originate from one and the same systemic morbid condition.

In this constitutional affection the first departure is a defect of nutrition. The cells, whose office in the normal condition is to nourish and maintain the tissues, deteriorate, lodge, and proliferate excessively in points of the connective tissue, crowd each other, harden, and form nodules, thus initiating *pulmonary tuberculosis.*

Pneumonia implanted upon the constitutional dyscrasia presents an infiltrate whose cells are of low vitality, proliferate profusely, and tend surely to further degeneration, rendering absorption or organization impossible, and thus is established *caseous pneumonia.*

In pneumonia occurring in previously healthy subjects, whether catarrhal or croupous, the exudation is more plastic, its cell-life is higher, and accordingly its removal or organization is provided for. That pneumonia when not occurring in the pronounced tubercular diathesis terminates by resolution, or failing in this, by death, in the large majority of cases, corresponds, we are sure, with the experience of practical men. And of pneumonia which degenerates, that the previous existence of or predisposition to

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phthisis may be traced in many of the cases, is, we are likewise sure, amply confirmed by the results of clinical experience. As accounting for the remaining cases, comparatively few, where the pneumonia degenerates, and no previous diathesis is discernible, we feel permitted to fall back upon a latent predisposition, or one engendered under the debility and deteriorating circumstances incident to the progress of the cases.

A correct pathology is at the foundation of a correct treatment; and may we not hope that study and investigation of the subject will yet result in such discovery and settlement of truth as will insure the grand consummation when phthisis, so long the opprobium, shall come to signalize in its prevention and cure the triumphs of medicine?

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OPHTHALMOLOGY.

BY

J. H. BUCKNER, M. D.,

CINCINNATI, OHIO.

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MR. PRESIDENT AND GENTLEMEN:

It might be expected perhaps that I would enumerate in some detail the most valuable contributions of the year to the subject of this report. In doing this, however, I should only be rehearsing what has already been done by an abler pen than mine. The last volume of the R. L. O. H. reports furnishes a full and comprehensive review of the valuable work in this department for the year 1872. Neither is it my purpose to enter into an elaborate review of the progress and present condition of the science of ophthalmology, but I propose to submit what is mainly an abstract of notes taken during a recent visit to some of the principle eye clinics of Europe, trusting in the hope that however unworthy it may be in a purely scientific point of view to receive a place among the archives of Ophthalmology, it may not prove wholly uninteresting to this society. I wish also to remark by way of apology for its imperfections, that for reasons which it would be tedious to state, the preparation

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of the paper was necessarily postponed until on ship board, and those who have experienced the rocking and pitching of the vessel upon the billows of Old Ocean, are well aware that the situation is not very favorable to literary and scientific labor.

The greatest progress in the science of ophthalmology may be said to date from the discovery of the ophthalmoscope and its description by Helmholtz in 1851. This was the beginning of the new era. From this time, diseases which had hitherto baffled the skill of the eye specialist were investigated under a new light, and diagnosticated by this simple instrument. A great variety of ophthalmoscopes have been constructed, all embodying, with some modifications of form, the original idea of Helmholtz. In this connection I wish to mention, briefly, some of the merits and demerits of the ophthalmoscopes which are most generally used at this day. I shall avoid, as far as possible, a detailed description of these instruments.

The instrument of Prof. Edward Jaeger, which is extensively used in Germany, may be considered the best for the erect image, as on account of its shape it may be approached nearer to the eye of the patient with comfort to the observer than most other instruments; but for general use it is too cumbersome, and for the inverted image is inferior to other ophthalmoscopic instruments.

The Loring ophthalmoscope, the invention of Dr. Loring of New York, is regarded by eminent men of Europe and America as a decided improvement upon the instruments previously in use. The clinical assistant of Prof. Jaeger,—Dr. Schnabel,—prefers the Loring instrument to all others. Some of its advantages are its compactness and the facility with which the small ocular lenses can be adjusted so as to suit the refractive condition of the eye of the

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patient, and that of the observer. An obstacle, however, to its universal employment is its cost; in this respect, a considerable reduction has been made upon its original price. It can be purchased in Vienna at half the cost at which it is sold in New York.

An instrument has been made recently by Mr. Hawksley, of London, which is intended as an improvement upon the Loring ophthalmoscope. There is a slight difference in the arrangement of the sets of lenses, and what is more important the metalic discs in which the small lenses are fitted are thinner than in the original Loring; the central hole is also not so deep. This makes a lighter instrument, and by diminishing the depth of the central aperture fewer rays from the fundus of the eye under observation are obstructed in their passage to the eye of the observer.

Dr. Loring has, however, in a measure anticipated these improvements, and his later instruments are similarly constructed but still not so light as those made by Hawksley.

Mr. John Couper, one of the surgeons to the R. L. O. Hospital, has endeavored to combine the advantages of Jaeger's ophthalmoscope for the erect image, with those of the Loring ophthalmoscope. His instrument is so constructed as to admit of a plain or concave mirror being used. The mirror swings in a metallic frame and can be placed at any angle. Upon its metallic back is a spring for holding the three separate discs in which are fitted the concave and convex lenses as in the Loring ophthalmoscope. He had not perfected the instrument to his satisfaction when I saw it last. If he can carry his idea to a successful issue, I have no doubt it will prove a further advance in the power of this most interesting and valuable means for diagnosis.

The Liebreich ophthalmoscope is probably more generally

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used than any other. It combines simplicity of construction with cheapness and lightness. For the general practioner it will perhaps continue to be the most popular.

Some difference of opinion exists upon the subject of the size of the mirror, the diameter of its central hole, and whether it should be of metal or glass, also whether the mirror should be perforated if of glass, or only have the covering removed from the center for the aperture.

Without discussing the question I will quote from Dr. Liebreich, who will be recognized as the best authority upon this subject. He says, "I propose to make the hole not smaller than two millimeters (.08″), and the mirror not smaller than three centimeters (1.2″), and to use in preference a thin silvered glass mirror, the center of which is *not perforated* but only deprived of its silver covering. The focus of the mirror may be eight or ten inches."

DISEASES OF THE EYE.

I propose to notice briefly the prevailing character of diseases of the eye, from my own observation at the clinics of London, Paris, Vienna, and Dublin, together with some peculiarities of treatment, and a few of the rare and interesting cases which I met with.

One of the most noticeable features of the ophthalmic hospital clinics in London to an American physician, is the small number of cases of granular conjunctivitis (Trachoma) as compared to the amount of the same disease met with at the principal eye clinics throughout the Northeastern, Middle, and Western states of this country.

Dyptheritic conjunctivitis is also a rare affection at the London clinics. Of other diseases of the conjunctiva catarrhal and strumous opthalmia, (phlyctenular conjunctivitis) constitute the bulk of cases; next in frequency were

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diseases of the cornea, keratitis, scrofulous keratitis (herpes of the cornea), and ulcerative corneaitis. Next in order were diseases of the appendages of the eye, tinea ciliaris, and diseases of the lachrymal passages. Iritis and diseases of the retina and choroid were about equal in frequency.

At Paris, the only important difference in the character of cases which came under my notice was the greater frequency of granular conjunctivitis and purulent ophthalmia, dyptheritic conjunctivitis is also comparatively not an uncommon affection at the Paris clinics.

At Vienna, phlyctenular conjunctivitis, granular conjunctivitis and affections of the cornea, particularly herpes cornea, form the greater proportion of cases. Purulent ophthalmia and dyptheritic conjunctivitis is here met with in nearly the same proportion of cases as in Paris. Iritis, idiopathic and syphilitic, and diseases of the choroid and retina are found in the same proportion as in London. I did not find at the clinics in Vienna a greater amount of errors of refraction and accommodation than in London and Paris, although it is a well known fact that these affections prevail more extensively throughout Germany and among German-speaking people of other countries than elsewhere—a circumstance which I suppose to be due to the character of the German type which is undoubtedly more trying upon the eyes and, I believe, more productive of asthenopia and optical disorders than the Latin type. It is so universal a custom among Germans to wear glasses that I presume a large proportion of those requiring them go to the optician without consulting the eye-surgeon. The evil effects of this indiscriminate use of glasses has been fully set forth by Dr. Cohn of Breslau. "Among 10,000 children, he found 1,730 with defective vision, making 17.1 per cent, the average number, increasing with the

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degree of demand upon the eyes at school. He found only 107 out of 1,004 near-sighted children wearing glasses; of these, only 8 had been ordered by a physician, the other 99 bought by the children on their own selection. Some had changed the glasses prescribed for them by a physician, for stronger ones. Of the 107, only 11 had glasses that were not injurious.* In this connection permit me to say that the propriety of applying to the eye surgeon for his selection of glasses instead of the optician, can not be too strongly insisted upon. *It is a recognized law* by the *best authorities upon ophthalmology.*

The prevailing type of diseases at Dublin are granular conjunctivitis and strumous ophthalmia, (phlyctenular opthalmia.) Here we see those obstinate cases of pannus which so vex and worry the soul of the eye specialist. We have the same class of cases, chiefly among the Irish in our own country. In short, the eye clinic at Dublin was essentially the same in the general character of diseases as at the eye clinics of New York.

PECULIARITIES OF TREATMENT.

Dr. Wecker of Paris treats granular conjunctivitis and papillary trachoma with a strong solution of Goulards extract, about 50 per cent of the extract to the ounce of pure water. He applies this solution to the everted lids with a camel's-hair brush, and washes off the lids immediately with water. He claims that by this plan these obstinate affections can be cured much sooner than by the usual mode of treatment. Abrasions of the cornea do not with him contra-indicate the lead solution.

* The Eye in Health and Disease.—(Jeffries.)

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Dr. Liebreich, for the same disease, uses chiefly a solution of nitrate of silver 10 grains to the ounce of water, brushed upon the everted lids.

Dr. Wecker treats chronic inflammation of the lachrymal sac by passing a bent silver tube into the nasal duct, and syringing through it solutions of soda, potash, and astringent washes, slowly withdrawing the tube at the same time, so that the fluid will reach the whole of the diseased surfaces.

Mr. Henry Powers, surgeon to the O. H. Charing Cross, London, eye surgeon to St. Bartholomews, treats purulent ophthalmia with a solution of permanganate of potash, three to five grains to an ounce of water, applied to the eyes three or four times a day.

STRABISMUS OPERATIONS.

Method of Prof. Arlt: The lids being separated by the speculum, the conjunctiva is seized with toothed forceps and freely divided across the insertion of the rectus muscle, the connective tissue is divided for a short distance along the muscle. The points of the forceps are now introduced closed under the conjunctiva, and when sufficiently far the points are opened and by a quick elevation of the hand the muscle is caught and with a pair of small blunt-pointed scissors is cut by successive snips at its insertion into the sclerotic. A small blunt hook is then used to ascertain if all the muscular fibres are completely separated at their attachment. The eye is then tried and if the division has been sufficient is simply bandaged; if the squint is not overcome he divides more freely the connective tissue. If on the other hand the division has been too free, which I have not witnessed, he unites the conjunctiva with a suture to the capsule of tenon, so as to bring it and the tendon of the muscle forwards.

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Operation of Prof. Jaeger: An assistant takes up a fold of the conjunctiva over the insertion of the muscle; with another pair of forceps Prof. Jaeger takes up a similar fold of conjunctiva, just below the inferior margin of the muscle; a slit is then made in the conjunctiva between the two forceps, parallel to and over the border of the muscle, the tendon of the muscle is exposed, a blunt hook passed beneath it and its point brought out through the slit in the conjunctiva, and with blunt-pointed scissors the tendon is divided at its insertion.

Operation of Mr. Critchett: This is the one usually performed at the Moorfields Eye Hospital, London. The patient having been placed under chloroform and the stop speculum introduced, a fold of conjunctiva and subconjunctival tissue is seized with the forceps at the lower edge of the insertion of the rectus muscle; this fold is divided so as to expose through a small slit the tendon of the muscle. Through this slit a blunt hook is passed beneath the tendon, the latter is then made tense and the points of the scissors but slightly apart are introduced into the wound, one point passed along the hook beneath the tendon and the other in front of the tendon between it and the conjunctiva; the tendon is then divided by successive snips close to its insertion.

Either of the above operations is comparatively easy of performance, although the latter seems to me to be the most elegant.

CATARACT OPERATIONS.

Without entering into a detailed description, I wish to briefly notice the methods for extraction of cataract as performed by some of the eminent eye surgeons of Europe.

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At Moorfields Hospital, Graefe's operation or a slight modification of it is chiefly done by all of the surgeons in attendance with the exception of Mr. Streatfield, whose peculiar method I have reported in the Phil. Med. & Sur. Rep., of Feb. 1st. The success of Graefe's operations as compared with the flap and other extraction operations as obtained from the books of this hospital, show a large per cent in favor of Graefe's method.

Mr. Henry Powers, at Charing Cross, O. H., operates by Graefes' method, but still performs the old flap-operation in favorable cases, and occasionally operates by reclination.

Dr. Liebreich operates for extraction in every case by his new method. A detailed description of this operation has been published by Claxton & Co., of Philadelphia. Some of the noticeable features in the minor details of Liebreich's operations are, that he does not give chloroform, does not use a speculum, and does not require an assistant.

Dr. Wecker of Paris usually operates by a modified Graefe method, the details of which are given in Vol. VII., part 3, of the R. L. O. H. reports. He also performs the operation of removing the lens in its capsule in favorable cases as strongly advocated by Dr. Pagenstecher, of Weis Baden, and M. Sperino.

Prof. Arlt does Graefe's operation according to the method—as I was informed by his assistant, Dr. Satler—practiced by the distinguished Graefe during the latter years of his life. In this operation the puncture and counter-puncture is made further back than is ordinarily done by other operators. The section is completed in the sclerotic and a long conjunctival flap of about 1½ to 2 lines is made. At the Moorfields Hospital the surgeons are not favorable to a long conjunctival flap.

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Prof. Edward Jaeger, the colleague of Prof. Arlt, completes the section in the sclero corneal border and seldom leaves any conjunctival flap. It is only in the last year that he had become reconciled to Graefe's method, and he is still quite partial to the old flap-extraction operation, and speaks in very respectful terms of reclination.

At the Dublin O. H., Graefe's operation is done by Dr. Wilson, and Sir William Wilde. The latter is, however, still in favor of the old flap-operation in suitable cases. Dr. Wilson prefers to make the iridectomy previous to the operation of extraction. In cases of secondary capsular cataract, he makes an incision in the cornea, passes in a pair of iris forceps, seizes the capsule and withdraws it.

In opposition to the current opinion of most European operators I may state that Prof. Quaglino of Pavia, Italy, is a strong advocate for the old operation of reclination. He says that "the most permanent and brilliant results of depression are obtained in the case of cataracts which are either soft or cheesy in consistency, in the fluid ones among middle aged people, and in those which occur in infancy. In hard senile cataracts it may be adopted, but exceptionally."

Without stopping to discuss the propriety of performing at this day the old flap or reclination operation for cataract, we will briefly notice the relative advantages of the Graefean method and Liebreich's operation.

Dr. Satler remarked to me that Prof. Arlt's loss in extraction of cataract by Graefe's method was about two per cent for the last year. Other eminent and skillful operators have not been nearly so fortunate. Graefe's best statistics showed a failure of 2.8 per cent. The semi-annual report of Dr. Wecker's clinic for 1871 gives 8.15 per cent of failures by his modified Graefe's operation.

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Judging from my own observation and data, which I am not at liberty to use, I am convinced that a fair and impartial report of all the principle eye-clinics of Europe would show an average loss for the last two years, nearly if not quite equal to ten per cent by Graefe's method. The great difficulty of arriving at any definite conclusion from published statistics lies in the fact that no uniform standard has been fixed for the degree of vision necessary to constitute a successful case. Dr. Wecker considers an acuity of vision of less than $\frac{1}{6}$th, an incomplete result. While some other operators give as low as $\frac{1}{10}$th. I should be in favor of making the uniform standard $\frac{2}{6}$ths for successful cases, and any degree of acuity of vision below this to be classed as partially successful. The result of Liebreich's new operation for the extraction of cataract, in the hands of its originator has been, according to my observation, more successful than any other. Of fifteen cases of cataract which I saw Dr. Liebreich operate upon by his new method at Paris during the Christmas holidays, all were successful. I saw there, cases three, seven, and ten days after the operation, and at my last visit all were doing well and had good vision. Slight iritis ensued after the operation in two of these cases, but it was readily subdued.

A few days before leaving London, Dr. Liebreich informed me that he had operated for extraction of cataract in 23 cases (by his new mode) at Paris, during the first week of last April, without a *single failure.* The perfectly clear, round, and natural pupil, and the absence of secondary capsular cataracts after Liebreich's operation would seem to make it preferable to Graefe's method, but other operators have not had the success with it which it has been attended in the hands of Dr. L., prolapse of the iris and attachment to the corneal wound, (anterior synechia,) being a fre-

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quent occurrence. I may also state that among the many eminent eye surgeons with whom I conversed in Europe, but one or two were favorable to Liebreich's cataract operations.

INTERESTING CASES.

Moorfields Hospital, London. Congenital hypertrophy of the conjunctiva forming a ridge-like tumor upon which were long hairs growing. Operated upon by Mr. Hutchinson.

Displacement of the lachrymal gland; clinic of Dr. Liebreich.*

Cyst of the iris. Clinic of Prof. Arlt, Vienna, February 14, 1873. The patient, a young man, received a blow upon the eye with some sharp instrument, which penetrated the cornea and wounded the iris. The accident occurred some four or five years previous to his applying to the clinic. Four or five months since the cyst was first noticed, it now fills one fourth of the space occupied by the anterior chamber, and is of a delicate pearly shade. Prof. Arlt made an incision in the cornea and introduced the iris forceps, seized the cyst wall, drew it out and snipped it off with scissors. The eye did well, and after several weeks there was no return of the cyst.†

Prolapse of iris and its attachment to a fold of conjunctiva. Clinic of Prof. Arlt. P. T——, age twenty-four, had suffered with phlyctenular conjunctivitis. On the 3d of January he was attacked with acute blenorrhea, was treated abroad for three weeks, when he applied at the

*Reported by me in Philadelphia Med. and Surg. Reporter February 1.

†Dr. Rothmund quoted all the cases of cysts of the iris he could find recorded,—37. In twenty-eight there was a history of injury. Vol. VII, R. L. O. H. reports.

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clinic. There was observed a large prolapse of the iris of the left eye, and only a small portion of the cornea remaining. A large fold of conjunctiva was drawn over the upper part of the cornea of the right eye, presenting the appearance of a superior Pterygium; the fold had become attached to the prolapsed iris. At one point, a probe could be passed under the fold close to the edge of the cornea, and could be moved upwards freely beneath the retrotarsal fold. The greater part of the cornea was opaque. The anterior chamber was narrowed by the attachment, but of moderate depth. The pupil was pear-shaped, and fixed by the prolapse of iris. Operation: A ligature, double, was passed under the fold and cut so as to leave both ends free. One ligature was tied near the point of conjunctival attachment to the iris, and the other was tied near the cartilage. The following day the lids were much swollen and the cornea infiltrated with pus; consequently the thread was removed and the fold cut near its attachment. The eye could at once be freely turned downwards, and upon the application of ice the swelling of the lids and the corneal infiltration disappeared, and no trace of the fold or its attachment remains.

Transplantation of the conjunctiva of the rabbit to the human eye after the removal of an epithelioma. Clinic of Mr. Henry Powers, F. R. C. S., Charing Cross O. H. This man was operated upon by Mr. Powers ten years ago for epithelioma upon the lower lid of the left eye. Two years afterward it reappeared. Three operations have been performed upon it. Condition May 12, 1873: The lower lid destroyed and the inferior portion of the ocular conjunctiva invaded by the cancer. The diseased parts were removed with the

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knife; a white rabbit, in fine condition, being ready, it was stunned by a blow upon the head and before life was extinct Mr. Powers dissected the conjunctiva in separate strips from the lids and eye balls, and transferred them as fast as removed to the surface wound upon the human eye. These strips were united to the human conjunctiva and to each other by a few fine sutures. On the third day after the operation the strips were found to have adhered at a few points inferiorly, but on the eye-ball adhesion seemed to have been prevented by the effusion of puss, which had carried away from this part the patches of conjunctiva.

Mr. Powers informed me that he had several times successfully ingrafted a portion of the cornea of the rabbit to the human cornea but the new growth becoming opaque rendered the operation futile.

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Dipsomania and Drunkenness.

BY

D. A. MORSE, M. D.,

Formerly Lecturer upon Legal Medicine and Insanity.

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* * * * "*la* DIPSOMANIE *n'est pas davantage un etat mental "morbide special: elle appartient au même groupe de symptomes que la "boulimie, le pica, la malacia, le degoût pour toute espece d'aliments, "et comme-eux depend de la gastralgie; ce besoin* DIT *irresistible de "boire des alcooliques est le resultat d'une perversion de la sensibilite "gastrique,* MAIS N'EST CERTAINEMENT PAS UNE MONOMANIE." *De "l'etat mental dans l'alcoolisme aigu et chronique, par Le Dr. Au- "guste Voisin. Page* 54- (*Paris* 1894.)

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DIPSOMANIA AND DRUNKENNESS.

BY

D. A. MORSE, M. D.,

Formerly Lecturer upon Legal Medicine and Insanity.

Is there a DIPSOMANIA? What is its *nature?* Is it a *form* of *Insanity?* Is it a *Monomania?* What distinguishes it from Common Drunkenness? How is it related to *Delirium Tremens?* What is the *Mental State?* What degree of *Legal Responsibility* is determined thereby? To what extent can drunkenness be alleged as an excuse for crime? How far will it relieve from Legal Responsibility?

What "*tests*" shall we apply to determine, with the Drunkard, *insanity*, and as a consequence irresponsibility, or the contrary, *full Legal Responsibility?*

GENTLEMEN:

Such are the questions into which our subject naturally resolves itself, and which we desire to propound to-day for your consideration—questions that in all probability will not be of equal interest to every one, yet questions that should interest every medical man who is liable to be called

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as an expert,—that should be fully understood by every well informed man; questions that in recent trials in New York, and elsewhere, have demanded great labor and a profound examination of their claims, in a medico-legal point of view, with reference to the facts constituting the several cases in which they have been alleged as a means of defense —as an excuse for crime that immunity from punishment might be afforded thereby.

The Transactions of this society announce the subject of my Report: INSANITY. That which the Report was intended to present, and which I worked up for this occasion, was a consideration from a medico-legal stand-point, of the subject of *Criminal Responsibility*; discussing the relations of organization to responsibility; the *ideal standard* that determines full legal responsibility; the relation of *moral depravity* to the so-called *moral insanity* of writers.

For this purpose, and other applications of it (*as my work*, "MORSE'S MEDICO-LEGAL CRIMINAL PROCEDURE: THE LAW, EVIDENCE, AND PRACTICE"), I have gathered from every source possible, in this country and Europe, material which has proved to be a very considerable amount. From the great length to which it was necessary to extend the paper, that full justice might be done to the subject, I determined last week to present a paper upon a part only of the subject—to discuss the *monomanias*, the relation they sustain to other forms of insanity, whether there is in reality an insanity without delirium, and if so the legal consequences. To do this required more time than I would be able to give it. I therefore concluded to confine my paper to one form of disease, *alleged to be a monomania*, hoping thereby to better exhaust the points presented, and will, if it is

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thought desirable, at our next meeting, discuss the monomanias in all their various relations, but chiefly with reference to the points mentioned above, and mania with homicidal tendencies—instinctive or reasoning mania; the relation of *instinct* to the mental faculties, and the part it plays in the instinctive or impulsive forms of insanity.

In the investigation of our subject I propose to follow the injunction of Aristotle, to first determine whether a fact alleged *be in reality a fact*, before an attempt is made to explain it, to show why it is or the consequences of it.

In medicine, perhaps more than in any other science, are theories presented to explain supposed conditions, when in reality the conditions explained never existed.

Writers upon logic and metaphysics, to illustrate this principle, cite the anecdote related of King Charles II. of England, who submitted to a learned society for explanation the question why it is that a jar containing water when a live fish is placed therein weighs no more than before, but when a dead fish is thrown in the weight is equal to the sum of the respective weights of fish, water, and jar. Several days' discussion followed, and many learned and apparently satisfactory explanations were given of the question, but at length a member of the society called attention to the suggestion of the old Grecian philosopher, and suggested that the experiment be tried to determine first whether the fact *assumed* was a fact. A pair of balances were brought in, the experiment tried, when lo! to the dismay and mortification of all it was found the weight was the same whether the fish was alive or dead.

In my humble opinion many theories based upon the supposed existence of particular conditions of insanity, presented

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to explain the legal consequences thereof, are no better founded, and bear as much relation to the truth, as do to a consideration of man's free moral agency the questions, "How many angels can stand on the point of a needle?" or, "Should Christianm en wear sewed boots?" In this application of legal relations, theoretically, the *an sit*, whether it be so—whether the condition exists has not been first de-determined.

We, keeping this in mind, will endeavor to—

I. Ascertain if there is a disease entitled to the name of a *monomania*, which disease has been named *dipsomania*, and other terms expressive of the views of the person writing upon it, as *methomania*, *furor bibendi*, *oinomania*, *anamethusis*, with Bruhl-Cramer and other Germans, *trunksucht*, with the French *folie d'ivresse*, *folie transitoire d'ivresse*, etc., etc.

II. Its Nature.

III. The Mental State.

IV. The degree of Legal Responsibility.

To sustain our first division—whether there is a dipsomania—we must interrogate every possible *source of evidence* that we can cause to respond. The grounds of our belief and confidence in these sources should be such that no doubt should remain that that which we seek to establish is not thereby confirmed. These sources of evidence are few in number. The sources, the "*best evidence*" the subject admits of, may be divided into three classes.

1. The voice of authority.
2. The evidence of the party alleged to be a dipsomaniac.
3. Our own experience and judgment.

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1. *The voice of authority.* We shall present upon the subject of dipsomania the views of those authors whose works have become classic. It is presumed that authors who possess cultivated minds—who have traveled the same road we are about to travel—who from long experience are competent and careful observers, and are able to make inferences from many facts, keeping them all before the mind—not viewing them from one stand-point alone—who, unbiased, clearly define their views, will convince of that whereof they speak.

The first author we desire to quote is the first writer who called attention to the condition in question. Dr. Salvatori read before a medical society at Moscow, December 8, 1817, a *memoir* upon what he called by several names. His language is as follows: "The malady to which I desire to call your attention has thus far been banished from practical nosology * * * I wish to speak of the habit of drinking in an excessive manner of wine and strong drink, and of a special disease the offspring of it,—that which we may call furor bibendi, or, to employ a Greek word, *oinomania.*" In another paragraph he terms it *anamethusis*, which means repeated drunkenness (ivresse reiteree).

Rayer in 1819 proposed to replace these terms by that of *delirium tremens*—a word coined by Dr. Sutton in 1813.

Dr. Salvatori (quoted by Foville fils) in his work mentioned above, gives the following description of an attack of dipsomania, which I translate from the French. Salvatori says: "These are the principal symptoms: In the morning before eating there is nausea, languor, vertigo, frequent eructations; there is a much more abundant secretion of saliva than ordinary, trembling of the limbs, general

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malaise. After some days passed in this way the appetite vanishes, sleep is short and disturbed, life appears intolerable. The image of the drink preferred presents itself then to the mind of the unfortunate; it so occupies his mind that he can receive no other impression, nor take heed to the advice of friends, or of their tears. The unfortunate (*malade*) feels himself forced of necessity to drink, and he says that if they do not furnish him drink he will become insane. Under the influence of this terrible impulse he places the lips to the cup and intoxicates himself at the first draught. The premonitory symptoms then disappear, the nausea and melancholy are alike dissipated, the physical force returns, the pulse is rapid. During two or three days the mind is cheerful, then if liquor is wanting there is great irritability. The sight is now troubled, speech difficult, the mind really alienated, the melancholy returns, the victim complains of his fate, the pulse is *spasmodique.* The intoxication is then at its height. It produces vomiting of a glutinous matter—acid and almost corrosive. The individual detests alcohol and returns to reason only to accuse himself. He falls into a state of languor, has during his sleep profuse sweats, which exhale the odor of alcohol. He is affected by pains in the stomach, diarrhea, and tenesmus.

"I have never seen the duration of an attack of this species exceed fifteen days. Sometimes it ceases the sixth or ninth. During the interval of sobriety which follows, all kinds of liquor inspire absolute disgust. I have seen many who after an attack of fifteen days remain sober during another fifteen; others abstain during a month and even half a year."

Dr. Erdman, who remained a long time in Russia, has

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given an account of this singular disease. Marc has translated it into French from a German journal. I translate it from Marc's. *De la Folie consideree dans ses Rapports avec les questions medico judiciaries, Paris,* 1840. Dr. Erdman says: "There is a particular form of dipsomania known in Russia under the name of *Sapoi,* which merits mention. It consists in a periodic propensity to abuse spirituous drinks, a propensity that even men very highly endowed with reason can not conquer. These drinkers abstain during several weeks, or months, from their cups, with the firm resolution to drink no more; they show not otherwise the desire; but little by little they experience a *malaise,* a disgust for all occupation, even for all recreation, a want of appetite, and at length a melancholy bordering on despair. Then shows itself anew a most ardent thirst for strong drink. The victim can no longer content himself: his temperance resolution is forgotten. He begins to drink, becomes intoxicated, continues to drink,—sometimes without taking food—and falls at last into a state of drunkenness, in which condition he remains for several days, and which at times is accompanied with maniacal delirium. Then the desire for strong drink ceases, and the individual falls into a kind of apathy, which sooner or later ceases.

"From this moment the liquor inspires disgust and the individual recognizes all the bad consequences of the vice of drunkenness, and soon makes a firm resolution to drink no more; but it is in vain, for, sooner or later, the same symptoms which accompanied the desire for strong drink reappear, and the same scene is renewed. This irresistible propensity for drunkenness is observed, it is true, the most fre-

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quently among the inferior classes; but it is not rare in the higher ranks of life. I recollect a man of a cultivated mind and endowed with the best qualities of heart. After an insanity caused by drunkenness, for which I treated him, I made some remonstrances the most serious upon the consequences of his excesses. From that moment he ceased to drink, remained during two months faithful to his resolution of temperance, and published everywhere that to me he owed his recovery. But soon he commenced to drink more than ever. My most active efforts in his behalf were vain. I had represented to him well his course and that it would end in his death. He replied that he much preferred death to the abandoning of his course. Sometime after he, being in a normal state, conceived the idea of correcting himself; but this resulted as before, and he being attacked with a pernicious fever, succumbed.

"Periodic dipsomonia does not always terminate so mournfully, but often it is prolonged during many years."

Roesch gives the symptoms of dipsomania, but divides it into *two varieties—continuous* and *periodic*. The main symptoms he gives are depression of spirits or melancholy, sleeplessness, agitation, nausea, and constipation. He says: "Doubts are everywhere raised against the existence of periodic drunkenness (dipsomania), nevertheless, they have been completely removed, as Henke well demonstrated, and above all by the excellent work of Erdman. Erdman, during a long sojourn in Russia, not only has seen very often the ordinary effects of strong drink upon the organism,—even to *delirium tremens*—but besides has observed that periodic drunkenness which ends by becoming a true mental malady, in which the man loses his free will and is no more in a

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state to resist his propensity than is a female attacked with nymphomania. But Henke proved that this morbid condition exists in the rest of Europe, especially in Germany." (*Annales d'hygiene et de medicine legale, T. XX. p.* 50-63, 1838.)

In 1822 Pierquin, of Montpelier, published an observation similar to and confirming those cited.

In 1827, Chambeyron published a translation of Hoffbauer, with notes by Esquirol. One of these notes contains the following: "In some cases, observation demonstrates that the abuse of intoxicating drinks are the first symptoms, or better, the most prominent symptoms of a commencing insanity. * * * The persons attacked with this variety of insanity obey a force which it is not in their power to resist. The motives the most powerful, the resolutions and promises the most solemn, the disgrace and danger to which they are exposed, the physical pains which attend them, the punishment with which they are threatened if they correct not their ways, the prayers, supplications of friends, nothing can deter them from the mournful propensity. These individuals, are they not true monomaniacs? If we observe them with care we will find in them all the features that characterize partial insanity."

This would seem to confirm the views of those who maintain the existence of a special form of insanity—a monomania.

Tardieu (*Manuel de Pathologie et de Clinique Medicales*) uses this language: "The monomania of intoxication (dipsomania) presents the same character as the other monomanias without delirium, and has not a less real existence; it is even more frequent than the greater part of them. These

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persons of whom the habits of life are the farthest separated from debauchery and drunkenness show a kind of physical and moral weakness, in which they are gradually exhausted, delivering themselves up to the abuse of alcoholic drinks, and giving way soon to an impulse they have not power to resist. The motives the most powerful, the resolutions of greatest force, the promises the most solemn can not deter these unfortunates from their deplorable tendencies. At times this desire is, as we may say, periodic, and reappears during several years at the same time. In the intervals the afflicted remain sober; some even have a great repugnance to all fermented liquors, and drink only water. The critical ages of man and woman are not without influence upon the development of this disease." (P. 558, *La Monomanie de L'ivresse, Dipsomanie.*)

Marce, Traite Pratique des Maladies Mentales, p. 387, under the name, *impulsive monomanies*, treats of *Dipsomania.* He says, "We designate under the name of *dipsomania* a particular form of instinctive monomania, which consists in an irresistible desire to drink alcoholic liquors."

To accept all that these writers say it is necessary to admit the existence of a monomania—of an insanity without delirium.

Marc recognizes the existence of the disease in question, but does not define or describe it. His views upon the *nature* of dipsomania we will give under the proper division of our subject.

Greisinger, Traite des Maladies Mentales, p. 204, says: "Dipsomania, properly so called, or intermittent and periodic drunkenness, is rather a symptom than a cause of periodic insanity. Thus there are some cases,—I have myself

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observed a few—where, simultaneously with other phenomena of nervous origin, headache, prostration, pains in the epigastric region, a state of moral and general malaise, we see supervene a certain degree of melancholy, to which soon succeeds agitation. The individual thus affected begins then to frequent drinking-places, and to drink to intoxication during several successive days. During these times the drunkenness attains ordinarily the proportions of a veritable fit (acces) of mania; then the individual falls into a profound apathy and experiences an excessive disgust for alcoholic liquors. Ordinarily these attacks reappear a number of times. In order to appreciate well those facts relating to dipsomania, it is necessary to ascertain carefully whether the attack was preceded or not by a period of melancholy, if the individual offers evidence of an hereditary predisposition, and if on the contrary he has a taste for liquors. In this last case it is very rare that this desire for drink, that the attack of dipsomania, is the result of a morbid condition."

Orfila, Legale Medecine T. I. p. 420, speaks of ordinary *delirium tremens*, then adds further, "The German physicians have described another variety of insanity, or of *delirium tremens*, characterized in all its course by an irresistible desire to drink alcoholic liquors, by delirium, trembling, furor, by horrible abuse if the desire is not satisfied, or if the individual is not deceived by some substitute. This *dipsomania*—that is the name they give to this variety of delirium—can last some days or weeks, may be continuous or intermittent, terminate by a return to health or in incurable demency. In all these cases, the man should not be held responsible for his conduct; the drunkenness is not

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voluntary, it is the result of a true disease; to the criminal as well as to man in civil life we ought to apply, it seems to me, the laws relating to the insane."

Casper, Traite Pratique et Clinique de Medicine Legale, T. I. p. 368, says, under the subject of *maladies mentales*, of dipsomania, "Among the men who drink, some, and it is the greatest number, have not lost all control over themselves; they can yet subdue their vices; they drink often without becoming intoxicated, but nevertheless, altering more and more their nutritive functions, they end by succumbing to the consequences of alcoholic intoxication. Others are attacked with that peculiar affection we call the delirium tremens (*le delire des buveurs*); this is nothing else than a periodic mania. Others again fall into a state of mania, very peculiar, which though rare, is beyond doubt not less to be admitted, that which we call *dipsomania*. To the names of Bruhl-Cramer, Erdman, Clarus, Fuchs, Rademacher, to the authority of all these I can add my own personal observations." He then gives cases in detail to confirm his views and illustrate them.

Dagonet, Traite des Maladies Mentales, p. 410–11, confirms the views of other writers and quotes from Esquirol, Marc, Henke, and Fuchs, to support them. He says, "the malady appears by periodic attacks (*acces*)—that the affected may show regular habits and be sober, but that under the influence of some cause, physical or moral, the fit manifests its premonitory symptoms. The most prominent symptom or feature is an irresistible propensity to drink alcoholic liquor.

Bruhl-Cramer has been referred to several times. He disputed the validity of the claims of Salvatori to priority

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of description of dipsomania. It is singular, that two physicians of the same city should fail to receive the credit due them respectively—it is more singular that two years after *Salvatori* had read before a medical society his article upon dipsomania, Bruhl-Cramer should claim to be first to describe the disease. He termed the disease *trunk-sucht.* Hufeland wrote an introduction to the work and introduced first the word *dipsomania* from the Greek *dipsa*, thirst, and mania.

A number of other writers might be cited who confirm the views already given of the existence of a dipsomania. We will leave the Continent and notice a few English works, then one or two American.

Among the British writers, *Taylor* may be mentioned as a prominent medico-legal writer. He recognizes and admits the existence of a dipsomania, but treats only of the legal relations.

Forbes Winslow has described the disease in the *Journal of Psychological Medicine*, 2d series, vol. ii., p. 483, in 1862, in a review of a reprint of the work of Salvatori. Winslow quotes Prof. Christison, agreeing with him in saying that the work of Salvatori is the best that he is acquainted with upon the subject of dipsomania.

Bucknill and *Tuke*, *Manual of Insanity*, p. 218, confirm the views of those who maintain the existence of a dipsomania. They regard as the prominent feature of the disease *the irresistible propensity to drink.*

Of American writers we find some who mention dipsomania—others who completely ignore it. Beck only *hints at it*; Wharton and Stille are silent upon the subject, although they have a perfect mania *for manias.* Ray contains a discussion, chiefly relating to the legal relations of the subject. Other views are given on pages 488-9 of his

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work, but which are already quoted, in those given of Esquirol, Marc, &c. The work contains nothing new upon the subject, but is valuable in that it brings together the views of others in an original manner.

We might present an innumerable number of views contained in medical journals, dictionaries, &c., but it would add little to the value of the article—they being mere reiterations of the views long since put forth by classic writers.

2. *The Existence of Dipsomania as Proved by the Evidence of the alleged Dipsomaniac.* McNish, p. 163, *Anatomy of Drunkenness*, relates the conversation held with a dipsomaniac, with whom he remonstrated. The dipsomaniac replied: "My good friend, your remarks are just; they are indeed too true, but I can no longer resist temptation. If a bottle of brandy stood at one hand, and the pit of hell yawned at the other, and I were convinced that I would be pushed in as sure as I took one glass, I could not refrain. You are very kind; I ought to be grateful for so many kind, good, friends, but you may spare yourselves the trouble of trying to reform me; the thing is out of the question."

The books are full of like cases—but it is very difficult to say how much reliance can be put in the word of these men. Destitute of all moral principle, many of them have no regard for truth, honor, or even *common decency*. The old Adam of man's fallen nature forms in all these cases a strong element. *Drink they will*, their own desires being above all else, declaring that they "would drink if the devil stood over them," or as another one said to me a few years since: "If a jug of whisky stood at the depot, (that is, half a mile off,) and there was a row of cannon constantly firing

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from each side of the way, across it, I would risk my life to get the whisky." A fellow said to me while I was engaged upon this paper that he "wished I could give him something to make him decent." He had been drinking constantly for three weeks—his father was a drinker—the son inheriting a moral nature of a very low grade—with an unremitting thirst for drink, laziness, and a general state of good-for-nothingness. His passions were never restrained, nor his desires quenched, but he was reared simply to be a curse to both society and his friends.

Many men may be seen in every community where liquor has been drank for several generations, who declare that they are unable to refrain from drink—*yet they do for months when it is to their interest to do so*; as when the prospect of a wealthy bride, or other consideration is presented. They all declare that they are unable to withstand the sensation—the something which impels them to drink. Before they have drank to such an extent that brain and nerve disease are developed to a degree sufficient to dethrone the Will, they can in nearly every instance pause—even if the disease, or rather *vice*, is inherited. But too often they have no desire to pause; they declare in one breath that they are going to end their drunkenness, that they do not wish their children to grow up knowing their father was a drunkard, and with the next breath demand more liquor and drink to drunkenness—turbulent, boisterous, a terror to all peaceable citizens, they continue on until death removes them out of the way—leaving if they have children, offspring from which the various classes of idiots, insane, paupers, and criminals of all grades may be developed.

3. With this vast array of evidence, the accumulated wisdom, experience, and labor, of men devoted to mental science, are we convinced that a condition exists which is

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truly a *dipsomania*—a mania for drink? Does the experience and judgment of each one confirm the views presented? We have examined many authors—*not one dissents from the assertion that there is a dipsomania.* The only difference of opinion is concerning its *nature*—the degree of mental derangement—whether it is a mental disease, or only a physical condition, and the mental phenomena but symptomatic. As we shall endeavor to show in our paper upon the *monomanias** that there are certain physical conditions common to all these forms of disease, alleged to be insanity—we shall not exhaust the subject at present lest we destroy the interest in our paper.

II. *The Nature of Dipsomania* is set forth by Marc as follows: "The dipsomania that some writers have called *intermittent*, and which to my mind is the result of a vicious habit, *without any other cause than what idleness, sensuality*, imitation and dissoluteness of morals have contributed to it." His original language can not be *exactly* expressed in English, I have given the sense of it. It reads: "*la dipsomanie que quelques auteurs ont appelee intermittente, et qui, a mon avis, est la suite d'une habitude vicieuse, sans qu'aucune autre cause que la paresse, la sensualite, l'imitation et la dissolution des moeurs y aient contribue.*"

Roesch says, *memoir*, p. 335, "The moral state of a man habituated to drink, or as expressed by Clarus, of a dipsomaniac, is assuredly not normal, as I have above declared. Nevertheless, as a degeneration of morals, and of a nature that accompanies, not a real disease of the mind, and which hinders not the man from distinguishing the just from the unjust (good from evil), and from preserving some empire

*Appointed to report at Ohio State Medical Society, Toledo, June, 1874, upon MONOMANIA.

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over himself, responsibility is not modified, and for grave reasons is not abolished, the dipsomaniac, as all other immoral men, is responsible for the actions he commits when not drunk."

We quote this to show that this eminent writer did not raise dipsomania in the rank of mental diseases, above common drunkenness; that while he admits the existence of the disease, he regards it rather as a *vice* than a disease worthy of the rank of true insanity.

According to Erdman, "Dipsomania ought to be considered as a mental affection, with absence of free will, and which can be compared with some reason to the uterine furor."

Tardieu, speaking of the nature of dipsomania, says, "It is certainly very difficult to trace the line which separates the monomania of drunkenness from the debauchery which results from a violent passion and a vicious impulse. Some excellent minds are not disposed to see in dipsomania a true partial insanity.—(H. Royer Collard). Whatever it may be we can not refrain from remarking, that in all cases this instinctive depravity delays not to result in a weakening and derangement of the intellectual faculties which degenerates often into general delirium. Sometimes the unfortunate and disgraced, despairing of their power to conquer the desire which impels them, end their days by a violent death."

Dr. Tuke, Manual, p. 218, says of the nature of dipsomania: "This is a form of mental disorder, which, in an especial manner, requires to be discriminated from what may be termed a mere physiological condition, in which the human animal chooses to indulge in alcoholic beverages to excess. On the one hand, the admission of this disease into the department of mental pathology, does not

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need to make us conclude that there is no such thing as intemperance without disease; and on the other, the fact that the abuse of alcoholic drinks has oftentimes no disease to plead in its excuse, must not lead us to the opposite extreme of denying that a truly diseased cerebral condition may exist, the result of which is inebriety. How then shall we distinguish the two conditions, when the result—intemperance—is the same in both?

"First—by observing whether there are any symptoms present which can be referred to primary disorder of the nervous system, that is to say, other symptoms than those which as in ordinary drunkenness can be readily accounted for by the prolonged indulgence in alchoholic drinks. The family psychological history, again, is of great importance. Cases in which an insane parent has a drunken son, point strongly, of course, to disease. The development of the appetite for stimulants in early life is another indication in the same direction. But, to come more closely to the circumstances attending the habit itself. The prominent feature of this propensity is its irresistibility; the thirst for drink is the tyrant which overbears all the higher emotions and blindly leads the oinomaniac to a course against which his reason and his conscience alike rebel.

"*Dr. Hutchinson* was among the first to draw special attention to this disease. After observing that there are individuals who, at the festive board, invariably become excited, if not intoxicated, but are otherwise habitually sober, and in the course of a year drink much less than others who never appear to be under the influence of stimulants, and that others indulge in their potations in a regular manner and daily consume a larger quantity of liquor than is consistent with good health and sobriety, he proceeds:

"All these, however, possess self-control, and can at any

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time refrain from stimulants; but those afflicted with the disease can not do so, however convinced they may be of the impropriety of yielding to their propensity, or how desirious they may be to subdue it.

"The disease appears in three forms,—the acute, the periodic, and the chronic. The *acute* is the rarest of the three. We have seen it occur from hemorrhage in the puerperal state, in recovery from fevers, from excessive venereal indulgence, and in some forms of dyspepsia.

"The *periodic* or paroxysmal form is much more frequent than the acute. This is often observed in individuals who have suffered from injuries of the head; females during pregnancy, at the catamenial period and afterwards, and in men whose brains are overworked. Like the form about to be mentioned, it is frequently hereditary, being derived from a parent predisposed to insanity, or addicted to intemperance. In such cases the probability of cure is very small. The individual thus afflicted abstains for weeks or months from all stimulants, and frequently loathes them for the same period. But by degrees he becomes uneasy, listless, and depressed, feels incapable of application, and restless, and at last begins to drink till he is intoxicated. He awakes from a restless sleep, seeks again a repetition of the intoxicating dose, and continues the same course for a week or two longer. Then a state of apathy and depression follows, during which he feels a loathing for stimulants, is the prey of remorse, and regrets bitterly his yielding to his malady. This is followed by fresh vigor, diligent application to business, and a determined resolution never again to give way. But alas! sooner or later the paroxysm recurs, and the same scene is re-enacted; till ultimately, unless the disease be checked, he falls a victim to the physical effect of intemperance, becomes maniacal

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or imbecile, or affected with the form of the disease next to be mentioned.

"Of all the forms of oinomania the most common is the *chronic*. The causes of this are injuries of the head, diseases of the heart, hereditary predisposition, and intemperance. This is by far the most incurable form of the malady. The patient is incessantly under the most overwhelming desire for stimulants. He will disregard every impediment, sacrifice comfort and reputation, withstand the claims of affection, consign his family to misery and disgrace, and deny himself the common necessaries of life to gratify his insane propensity. In the morning morose and fretful, disgusted with himself and dissatisfied with all around him, weak and tremulous, incapable of any exertion either of body or of mind,—his first feeling is a desire for stimulants, with every fresh dose of which he recovers a certain degree of vigor both of body and mind, till he feels comparatively comfortable. A few hours pass without the craving being so strong; but it soon returns, and the patient drinks till intoxication is produced. Then succeeds the restless sleep, the suffering, the comparative tranquillity, the excitement, and the state of insensibility; and unless absolutely secluded from all means of gratifying the propensity, the patient continues the same course until he dies or becomes imbecile."

Dr. John E. Tyler, in his yearly report for 1866, as superintendent of the McLean Asylum, speaks of the nature of of dipsomania, as follows:

"It sometimes happens that after a fever, or other severe illness, or after a fall or blow upon the head, or after a severe domestic affliction or bereavement, or a sudden loss of property, a person always temperate is seized with and yields to an impetuous desire to drink ardent spirits. Thus,

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lamented as much by the individual as by his friends, but by successive indulgences which he can not refrain from, and from which if he is not prevented by others, he reaches the sad mental and moral condition of the inebriate. * * Such deserve but do not have sympathy, inasmuch as mental disorder precedes and causes the excess."

Dr. Anstie, in Reynold's System of Medicine, in his article upon Alcoholism, says: "It is in truth rather a variety of constitutional insanity than of alcoholic disease, but as their outbreaks owe many of their characteristic symptoms to the influence of drink, the disease requires notice in a treatise on alcoholism."

Leville, p. 249, *De la Folie des ivrognes*, Paris, 1825, presents the following upon the nature of dipsomania, and as Hufeland's description:

"Prof. Hufeland gives the following description of dipsomania: Unsteadiness of nervous system; lassitude of the members; various illusions of the external senses; altered sensibility of the optic nerves; trembling of the hands, and great timidity. The disease is consecutive to a first condition provoked by alcoholic drinks and fixes itself upon the abdominal viscera; there is fever, colic, and disagreeable sensations in the abdomen; that which does not belong to *delirium tremens*. Dipsomania is symptomatic, the delirum which characterizes it is like to that which accompanies certain fevers, and of which the principal cause is located in the apparatus of the digestive organs; it diminishes after the ingestion of spiritous liquors and reappears when their effect ceases. Recovery obtains but when vomiting supervenes." Hufeland, in 1819, in his preface to Bruhl-Cramer, says of dipsomania, "it has the greatest analogy to nymphomania."

The fact that it is not developed but with those addicted

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to some extent to the use of strong drink allies it closely to the more common forms of drunkenness.

All men do not drink continuously who have a thirst for liquor—a great part of all drinkers drink more or less periodically—Bruhl-Cramer says, Sec. 7: "The moral causes appear to operate but when the frequency of previous excesses have created a predisposition to dipsomania; at least I have not knowledge of one single case of dipsomania where the individual had not before committed excesses with strong drink."

Salvatori says: "The principal predisposing cause is a great excitability of the nervous system; another cause is the habit of frequently abusing wine; it is that which engenders the excessive excitability of the nervous system, which seems to be the principal element of the disease."

He does not consider dipsomania as an idiopathic mental affection but as a material affection of the body, which results in a weakness of intellect and insanity. He says:

"The disease is located in that part of the nervous system situated in the hypochondriac region, and that which we usually designate under the name of the abdominal ganglionic system; dipsomania ought then to be considered as a species pathologically belonging to the class we call common hypochondriacs and hysteria."

Bruhl-Cramer also declares that it is a disease purely physical. *To this we assent*, and as we find with the hysterical and hypochondriacal perverted tastes, so we have with dipsomania. With persons of a weak nervous system we readily find local disturbance become general in its influence. A weak, unstable nerve-center is always an excitable one. The desire is great for something that will suppress the unpleasant sensations. The local irritation is followed by sympathetic intellectual disturbance.

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Dagonet, Traite des Maladies Mentales, p. 288, says of *delirium tremens*: "This form of alienation ought not to be confounded with dipsomania, a variety of monomania, which is characterized by irresistible tendencies, violent impulses for drink, and which we will further describe."

Marce, as we have already seen, regards dipsomania as an *instinctive monomania*. He says, however, p. 387, "We designate under the name *dipsomania* a particular form of *instinctive monomania*, which consists in an irresistible desire to drink alcoholic liquor."

Descuret, La Medecine des Passions, says: "Drunkenness is sometimes continuous, but the most often it is intermittent. It is, in effect, with many individuals, that they are intoxicated but in the spring-time—others in the winter—some only certain times in a month or week."

Esquirol treats of dipsomania as *monomania* d'ivresse, and declares that these individuals are impelled by an irresistible force into abuse of alcoholic liquors. He says, p. 370, *Tome I. des Maladies Mentales*, after relating illustrative cases: "After the preceding facts, who can deny that there exists a mental malady of which the character in general is an irresistible force compelling the abuse of strong drink?"

He regards the periodic character as evidence of insanity from the fact that the individuals affected, in general, drink periodically and have a thirst for drink but when there is a predominance of nervous symptoms—when these subside the thirst for liquor is gone.

Morel, Des Maladies Mentales, p. 418, thus expresses his views of the nature of dipsomania: "That which it is proper to say of the irresistible propensity to drink alcoholic liquor, can and should be applied to other diseased conditions which, with some physicians, form distinct pathological entities: I wish to speak of the monomanias,

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suicidal and homicidal, of incendiarism and kleptomania. It is also as impossible for me to make a special disease of this irresistible force that bears the individual to drink as it has been to find a distinct mental affection *in that* blind instinct, *in that something indefinable which forces certain individuals to murder.* Suicide, incendiarism, theft, the depraved tendencies for drink and the consequences of it, are the facts which the most commonly lead to judicial investigations with the insane. Now my firm conviction is that all these acts are the symptoms of a mental disease of which the true pathological characters can be demonstrated."

Again he says, "It is not necessary to create a special form of mental disease, a monomania of which the principal character will be an irresistible tendency to drink."

Falret, Traite des Maladies Mentales, does not regard dipsomania worthy of being ranked as an entity in mental diagnosis, nor does he favor the designation of it as a *monomania.*

Greisinger we quoted, he regards dipsomania as a symptom rather than as a cause of periodic insanity.

Dr. Ray speaks of these cases as being the subject of vice. After giving cases to illustrate the nature of the malady, he says, p. 498, *Jurisprudence of Insanity*: "These phenomena strongly remind us of some of the manifestations of moral mania, and if further evidence is necessary to convince us that they are both connected with similar pathological conditions, it is abundantly furnished in some other phenomena of drunkenness. It is now well understood that this vice assumes sometimes a *periodic* character, persons indulging in the greatest excesses periodically, who are perfectly sober during the intervals which may continue

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from a month to a year. From a state of complete sobriety, they suddenly lapse into the most unbounded indulgence in stimulating drinks, and nothing but absolute confinement can restrain them."

Guy, Forensic Medicine, p. 171, says of the nature of dipsomania: "A craving after spirituous liquors is one of the recognized forms of unsoundness of mind (dipsomania); while in others it is merely a leading symptom of a more general disorder, in some cases the craving after alcoholic liquors is intermittent, showing itself only at intervals."

By the comparison of views of writers we have made we observe that it is clearly established that dipsomania is a *physical disease; the physical condition one of impaired vitality*, with consequent exaggerated or perverted desires. All authors unite in the fact that the all-essential feature of the disease is a craving for strong drink. From this we infer that the nutritive functions make a demand for something that will supply the apparent loss of vitality or give impulse to what remains. *In our opinion it is but a modified and exagerated desire. But what is a* DESIRE? To show the relation of the disease in question to a desire in a normal state, we must first fully comprehend the relation existing between sensation—desire—emotion, and the *will.*

Desire is a state of suspense, existing between a motive on one hand and execution or action on the other.

Bain, in his *Mental Science*, defines a desire: "The state of mind where there is a motive to act—some pleasure or pain, actual or ideal—without the ability." Again, "When a pleasure prompts us to work for its continuance or increase, and when we at once follow the prompting, there is no place for desire. * * In desire, there is the

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presence of some motive, a pleasure or a pain, and a state of conflict in itself painful."

There are various modes of escape from the conflict and unrest of desire.

The first is *forced quiescence*; to which are given the familiar names—endurance, resignation, fortitude, patience, contentment." With this we may add the remedy is a *voluntary* one. It requires an exercise of *will* power to suppress the impelling force of the desire. The *emotion* arising, that is a sensation giving rise to either pleasure or pain, may be neutralized and the impulse to action suppressed. The ability to control the emotions and to suppress them is an essential element of true greatness—for with this power developed to a high degree only can full exercise of reason and judgment be obtained. The *weak Will* yields to the demands of appetite, to the appeal of passion, to the example and influence of emotion in others. The power of the *Will* in controlling the passions, and the emotions of joy and grief, pleasure and pain, is illustrated with the old philosophers and in savage life better than elsewhere. They show a strange contrast between the mastery of the passions and the weak-willed, emotional class of more civilized life.

Upham thus pictures it in the savage: "Let the reader go with us a moment to yonder dark and boundless forest. Behold beneath the light of the uncertain and shuddering moon the fire kindled which is destined to consume the victim taken in war. View him fastened to the stake, his flesh slowly consumed, and, as it is burning torn piece-meal from his blackened bones. What inexpressible suffering! And yet this dark son of the forest, this poor, ignorant child of nature betrays no weakness of purpose, sheds no tears, utters no exclamation of impatience. His enemies

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can take from him his distant wigwam, his wife and children, his burning body, his expiring life; but the sudden death-song rising loudly and triumphantly is a proof that they have not taken, nor are they able to take from him, the firm resolve—*the unconquerable will.*"

Bain says, "A second outlet for desire is *ideal or imaginary action.*" The desire in question arising from some want or deficiency of the system, and having been once suppressed only by strong drink, the condition thereby obtained remains in memory, and the condition recurring, is a motive to repeat the excesses that desire may be unfelt. The vision of strong drink appears—the imagination pictures it constantly to the mind in pleasing colors, and the victim of dipsomania endeavors to drown his sensations in the intoxicating draught.

In man *four* main classes of desires may be said to exist, arising from the wants of his natural organization, or to supply material for the growth of body and mind:

1. The intellectual.
2. The moral.
3. Vegetative functions: Hunger, thirst, respiration, &c.
4. Reproductive functions.

These seem to be allied closely in the manner of exhibiting their demands. Either a motive to action is afforded through the desire, or an emotional condition results, requiring the exercise of will-power to restrain it. In a state of sanity the will is directed by the motive, subject to the sanction of conscience, reason, and judgment.

In criminal procedure, a man alleged to be insane, and consequently irresponsible, must be beyond the influence of motives, otherwise there is no immunity from punishment. Motives must cease to have power over him. With great criminals, or hardened and incorrigible, there is

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a *debatable*, middle ground between sanity and insanity, in which motives have not lost their power, if the *attention* is directed to the consequences of an act. The individual is *apparently* beyond the reach of motives, the censure or approval of society no longer influences him, yet he can if he sees proper govern his actions. There is a blind, instinctive impulse directing his actions, yet not beyond his power to thwart if self-interest prompts otherwise, or some end to be achieved can thereby be gained. In the vortex of the whirlpool of passion no ear is open to the voice of conscience. In this state of moral weakness *deliberation* and *judgment* fail to produce mature fruit. On the one hand there is an appetite, a desire,—a lust,—on the other, in the dim distance, looms up faintly to the unheeded, or *uneducated* conscience, with its imperfect ideal of good and evil, the path of duty. Emotion, the offspring of sensation, antagonizes *will*. The desire becomes imperative, and the will unaccustomed to exercise its executive power untrammeled, yields. The individual, if motives do influence him, flies to the society and scenes that past experience has taught him will absorb his attention, and drown all promptings of his better nature. He throws himself a *willing victim* into the current that will bear him irresistibly on, until he sinks beneath its turbulent surface to rise no more. The prayer of conscience is drowned amid the uproar of debauchery, *attention* forbids to exercise its office, and all that can operate for good is enjoined by this cultivated moral apathy to inactivity. Again, where conscience is not successfully stifled *but will be heard*, the individual pursues his way much as did the man who would not rise till noon. He delays reformatory action to hear the pleading of desire, until procrastination steals the opportunity for any other action. The *attention* divided between good and evil ren-

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ders man powerless to pursue the path of duty. The truth can only be found by undiverted, undissipated, unwavering attention in the course of proper pursuit.

A French author (*Malebranche, Traite de Morale,*) beautifully illustrates the fact that good actions can spring only from *attention*, and this full exercise of attention only from a cultivated, regenerated *Will.*

"The discovery of truth can only be made by the labor of *attention;* because it is only the labor of attention which has light for its reward; the attention of the intellect is a natural prayer by which we obtain the enlightenment of reason. But since the fall, the intellect frequently experiences appalling droughts; it can not pray; the labor of attention fatigues and afflicts it. In fact, this labor is at first great, and the recompense scanty; while at the same time we are unceasingly solicited, pressed, and agitated by the imagination and the passions, whose inspiration and impulses it is always agreeable to obey. Nevertheless, it is a matter of necessity; we must invoke reason to be enlightened; there is no other way of obtaining light and intelligence but by the labor of attention. Faith is a gift of God which we earn not by our own merits; but intelligence is a gift usually conceded to desert. Faith is a pure gift in every sense; but the understanding of a truth is a grace of such a character that it must be merited by labor or the co-operation of grace. Those, then, who are capable of this labor, and who are always attentive to the truth which ought to guide them, have a disposition which would undoubtedly deserve a name more magnificent than those bestowed on the most splendid virtues. But although this habit or this virtue be inseparable from the love of order, it is so little known among us that I do not know if we have done it the honor of a particular name. May I, there-

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fore, be pardoned in calling it by the equivocal name of *force of intellect.* To acquire this true force by which the intellect supports the labor of attention, it is necessary to begin betimes to labor; for in the course of nature, we can only acquire habits by acts, and can only strengthen them by exercise. But perhaps the only difficulty is to begin. We recollect that we began, and that we were obliged to leave off. Hence we get discouraged; we think ourselves unfit for meditation; we renounce reason. If this be the case, whatever we may allege to justify our sloth and negligence, we renounce virtue, at least in part. For without the labor of attention we shall never comprehend the grandeur of religion, the sanctity of morals, the littleness of all that is not God, the absurdity of the passions, and of all our internal miseries. Without this labor, the soul will live in blindness and disorder, because there is naturally no other way to obtain the light that should conduct us; we shall be eternally under disquietude and in strange embarrassment, for we fear everything when we walk in darkness and are surrounded by precipices. It is true faith that guides and supports, but it does so only as it produces some light by the attention which it excites in us; for light alone is what can assure minds like ours which have so many enemies to fear."

Man's moral power, moral principle, is then dependent upon the exercise of an intellectual faculty: *attention*, and attention upon the supreme executive faculty of the mind: *the Will.* Without attention there can be no exercise of the other mental faculties.

The weakened will has been regarded by some as a species of insanity. It is in reality an imbecility dependent upon an enfeebled cerebrum. How many criminals have their career of crime determined by an inherited feebleness

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of the will. The Coleridges illustrate well this principle of imbecility. The elder was an opium eater—the younger inherited the condition his parent had by habit acquired. Rash, impulsive, his life was a series of failures and bitter self-reproaches. In one of his books he wrote:

> "Oh! woful impotence of weak resolve,
> Recorded rashly to the writer's shame,
> Days pass away, and time's large orbs revolve,
> And every day beholds me still the same,
> Till oft-neglected purpose loses aim,
> And hope becomes a flat unheeded lie."

This is ever the condition of those who inherit a thirst for alcoholic liquor. *Elam* declares that "the *habit* of the parent, when inherited, does not appear in the child *as a habit merely*, but in most cases as an irresistible impulse,—a disease."

A writer in the Psychological Journal of Winslow, remarks in this language concerning the nature of so strange a disease:

"An impulsive desire for stimulant-drinks, uncontrollable by any motives that can be addressed to the understanding or conscience, in which, self-interest, self-esteem, friendship, love, and religion are appealed to in vain; in which the passion for drink is the master passion, and subdues to itself every other desire and faculty of the soul. * * * The victims of it are often the offspring of persons who have indulged in stimulants, or who have weakened the cerebrum by vicious habits or undue mental labor."

Morel presents a clear statement of those who inherit depraved tendencies, and sets forth a correct statement of those who inherit dipsomania:

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"Such cases present themselves to our view with the predominance of a phenomena of a mental order, which I have had occasion to mention—that is, a *complete abolition of all the moral sentiments.* One might say that no distinction between good and evil remains in the minds of these degraded beings."

That dipsomania is the result of derangement of nerve-element, may be inferred from its tendency to transmission by the same laws that govern the various forms of hereditary nervous disorders. It must be allied to gluttony, libertinism, nymphomania, and a variety of conditions that may be transmitted from parent to child—in their own form or one into which that has been metamorphosed. It finds its analogue in many diseases of a hereditary character.

As the scrofulous child will devour lime, plastering from the walls, or mud from the boots of any one within its reach, so the methomaniac craves, and drowns his desires in strong drink. It is a physical condition, displaying its main features through derangement of the digestive organs, and consecutively through intellectual disturbance. In diseases in which there has been a great drain from the system analogous desires exist. Thus, during the war, I have observed hundreds of men who had an ungovernable appetite for food and drink, who were the victims of chronic diarrhea. Digestion, absorption, and assimilation, all seemed to be arrested. The body melted down and flowed away in the frequent liquid discharges. Here the unsatisfied wants of the vegetative system gave rise often to a mental condition—to an apathy or torpor of the intellect-

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ual faculties, in which the patient thought only of food and the demands of nature. The brain did not, in many cases, sympathize with the local disturbance in the digestive organs.

With those suffering from dipsomania there is, on the contrary, a condition of the nervous system similar to that of hysteria. The nerve-centers are weak, irritable, unstable. This condition of the nervous system is encountered with the libertine. In fact, writers use very similar language in speaking of the influence of the sexual passion over the mind that they do of drunkenness. Most writers regard dipsomania as a sequel to intemperate indulgence rather than as a spontaneous condition, or as an idiopathic disease.

Bourgeois says of libertinism: "It is to the abuse of voluptuous sensations rather than to virtuous abstinence that it is necessary to attribute the maladies we have named (erotomania, &c); such is the mature opinion of thoughtful men, such as Max Simon, Duffieux, Diday, Mayer, Briquet, and Fredault, who have furnished indisputable proofs."

Writers have attributed erotomania to continence. *Bourgeois*, p. 118, *Les Passions*, says, "Seek not to excuse then the relaxation of morals, under the pretext of continence —that continence is impossible, that it is hurtful. No, this is not the physiological demand, it is the desire unrestrained, it is the abuse which has forced to bad habits and which corrupts the health. The brain has a powerful influence upon the functional activity of the genital organs. The *salacite* comes most often from the excitations of a depraved imagination."

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Again, he says of the power of habit in producing the condition: "In these impure connections soon is destroyed all mental vigor, soon is thrown to the wind all moral sentiments. * * * At length the inveterate habit of the debauchee can not be broken and you see many who remain unmarried that they may continue more at their ease their dissolute life."

Is it not true of the dipsomaniac? He at first experiences only an increased desire for drink, but yielding to it he establishes a habit which eventually becomes so deeply rooted that mind alone can not uproot it.

III. The Mental State. As may be inferred from the preceding pages, we regard the disease, dipsomania, as a purely physical condition, not entitled to the rank of an insanity until continued and oft-repeated returns of the drinking fits have degenerated the nerve-centers to such an extent that the will can no longer repress the desire. The intellectual disturbance will, as in fevers, dyspepsia, and all diseases giving rise to local abdominal irritation, be observed to keep pace with the condition of the nerve-centers, in relation to their stability or excitability.

These persons previous to drinking, when the fit comes on, appear to be able to fully comprehend their condition, to know right from wrong, that their excesses are disgraceful, yet, as do thieves, murderers, and scoundrels of all grades, they persist in their course, deaf to all entreaty, self-interest, reputation, or their own safety. There is no want of ability to comprehend what is their duty, but a persistent, absolute determination to drink at all cost—at all hazard—regardless of all consequences— *Will* seems subservient

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to the animal. The mental state, *during the period of sobriety*, differs in no way from that of other individuals who are not habituated to the use of alcoholic liquors—*when drunk* the mental state is similar to that of other drunkards.

In my opinion the disease is acquired, and even in those cases in which the hereditary thirst for drink seems irresistible, the condition is not developed fully until there has been previous indulgence. These repeated indulgences produce degenerations. There is in all forms of nervous disorders more or less periodic tendency exhibited. In common drunkenness there are few individuals who drink to any extent, that do not show more or less periodical desire. As degeneration of nerve-structure of the brain is developed, meningeal, gastric, and other irritations induced, the disease partaking more and more of the nature of delirium tremens so is responsibility lessened. While we do not dispute that in all countries where drunkenness has prevailed through several generations that a physical condition is acquired, described by writers, and which may be *transmitted*, becoming a *desire*, an *instinctive impulse* with the child, we do not believe that drunkenness, *previous to excesses*, is wholly *involuntary*, constituting a *psychial entity*, a special or *distinct form of insanity*. That is, *we admit the existence of a dipsomania*, but regard it as a physical condition. We admit more: that *true insanity* may be attended in its development, *among other symptoms*, with a nervous prostration—exhaustion— that impels the person to use immoderately of strong drink. It is *then* a *symptom, not the disease* more than a hot skin or a coated tongue is a bilious fever. It should be considered at its true value, as any

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other symptom, indicating a physical state. There are not the well marked pathological conditions of *delirium tremens*, illusions, hallucinations, tremors, and sleeplessness, dependent on degeneration of nerve-element. If these are an element of the case, forming an essential part of the aggregate of symptoms, we should be inclined to consider the case one of pure *delirium tremens*, and call it by that name. If previous excesses determined the condition we should then, if the above symptoms were present, have no doubt of the true character of the disease. For legal purposes, as a defense, it would be well to try to establish this in evidence.

IV. What "TESTS" *shall we apply to determine the degree of responsibility?* "Knowledge of right and wrong." The individual *when not too drunk*, has as clear a perception of duty as do the men who recruit the general class of evil doers. They declare positively the *right* and as positively enter upon the contrary. Shall the "irresistible impulse," that indefinable something, be the TEST? If we admit this principle into the Code of Criminal Procedure, making it the guide in determining responsibility, where shall we place the limit that shall cut it off from vice—from sensuality—immorality and complete indifference to the rights of others.

The same tests must be applied to all the monomanies—the same investigation of causes, conditions, and consequences that govern the acknowledged or accepted forms of insanity. If the condition is one of insanity *it does not follow as a natural consequence* that it relieves from all legal responsibility. To determine the *existence of insanity* is to establish one fact—the *degree* of *responsibility* is another.

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With delirium tremens there is no room for difference of opinion—the law relieves from all responsibility, as we shall show. The only *test of insanity* here required is, that the condition be proved to exist.

The Legal Relations of Drunkenness must be made to conform in their application to the more general relations of insanity. If voluntarily induced it bears about the same relations to crime that do the passions, and in no way excuses crime, yet as we shall see by the general course of cases, intoxication may be pleaded to show that *passion*, and not *premeditation*, *intent*, and *malice*, ingredients of the crime of murder, which if absent reduce the grade of the offense, was the motive-power in inducing the crime committed.

The plea of intoxication is admitted more by way of *explanation* than of *excuse* or *mitigation*. Thus to constitute a case of murder at common law the aforementioned ingredients must be proved to exist. The fact to be proved then is not whether the party was in a state of intoxication, but the state of mind with reference to these ingredients. It matters not in the final issue whether the party be drunk or sober; the question of fact is, whether any of the ingredients of the crime are absent. If *intoxicated* the law still presumes, in the absence of contrary evidence, that the act of killing is *willful*, *deliberate*, *malicious*, and *premeditated*, and the evidence of drunkenness is only admitted to explain whether there existed the ingredients of murder—premeditation, malice, intent,—at the time the alleged act was committed. If intoxicated, the law still regards the party to be of sound mind.

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Guy says of drunkenness: "This has no legal effect on any offense to which it leads. It neither increases nor mitigates the penalties that attach to it. It has even been deemed an aggravation. A drunkard's acts are therefore valid, unless it can be shown that the drunkenness was procured by another person with a view to an unfair advantage."

Those whose interest or *curiostiy* leads them to a further examination of the legal relations, will find in the following authorities what they may desire. Their views are those accepted by the courts, or the ruling of the Court itself.

"Long-continued inebriety, although resulting in occasional insanity, does not require proof of a lucid interval to give validity to the acts of the drunkard, as is required when general insanity is proved. When the indulgence has produced general derangement of mind, it would be otherwise."—[Gardiner v. Gardiner, 22 Wend. 526.

"Though voluntary drunkenness can not excuse for the commission of crime, yet where, as upon a charge of murder, the question is, whether an act was premeditated, or done only from sudden heat and impulse, the fact of the party being intoxicated has been held to be a circumstance proper to be taken into consideration."—[So * ruled by Holroyd, J., Rex v. Grindley, 1 Russ on Cr., by Grea, 8. Repeated in Penn. v. McFall, Addis, 257.

Delirium Tremens excuses crime. In the case of *Drew* (U. S. v. Drew), for the murder of Clark, the relations of delirium tremens to responsibility are well set forth. The evidence before the court, U. S. Circuit Court, May term, 1828, showed that Drew was of fair character, but addicted

* Overruled by Parks and Littledale in Rex v. Carroll, 7, C. & P., 145.

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to the excessive use of ardent spirits. After recovering from a drunken spree, in August, 1827, he threw all the liquor overboard from his ship. In two or three days after, he began to exhibit symptoms of an approaching *mania a potu*—suffered loss of appetite, sleeplessness, hallucinations and delusions. One of these was, that an Indian belonging to the ship was about to kill him, and calling him by name he promised to drink no more if he would not kill him. In the night of the 31st of August he attempted to throw himself overboard, but was prevented. The next morning while Drew and Clark were at breakfast, Drew left the table suddenly and was observed to conceal something under his jacket which was on the transom in another part of the cabin. He then turned round and requested Clark to go upon deck. The latter replied that he would as soon as he had finished his breakfast. Drew then exclaimed, "Go upon deck or I will help you;" took the knife he had covered with his jacket, and saying no more, plunged it into the right side of Clark's breast. Clark fell but rose again and went upon deck. Drew cocked a pistol, pointed it at witness and snapped it; it missed fire. Drew followed them on deck, and said to his mate: "Mr. Coffin, in twenty-four hours the ship shall go ashore."

He was then seized and confined. For some weeks his actions were those of one insane. When restored he was told that Clark was dead, and he replied that he knew nothing about it; that it appeared to him like a dream; that when he awoke he found himself handcuffed, but knew no more.*

* "It is not competent for the prisoner to give in evidence his own account of the transaction, related immediately after it happened, even though no

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After the above evidence, Justice Story gave as an opinion that the indictment could not be maintained, because the prisoner was beyond doubt insane when the offense was committed. He added:

"The question made at the bar is, whether insanity, whose remote cause is habitual drunkenness, is or is not an excuse in a court of law, for a homicide committed by the party while so insane, but not at the time intoxicated or under the influence of liquor. We are clearly of opinion that insanity is a competent excuse in such a case. In general, insanity is an excuse for any crime, because the party has not the possession of his reason, which includes responsibility. An exception is, when the crime is committed while the party is in a fit of intoxication, and while it lasts; and not, as in this case, a remote consequence, superinduced by the antecedent exhaustion of the party arising from gross and habitual drunkenness.

"However criminal, in a moral point of view, such an indulgence is, and however justly a party may be responsible for his acts arising from it to Almighty God, human tribunals are generally restricted from punishing them, since they are not the acts of a reasonable being. Had the crime been committed when Drew was in a fit of intoxication, he would have been liable to be convicted of murder. As he was not then intoxicated but merely insane from an abstinence from liquor, he can not be pronounced guilty of the offense. The law looks to the immediate and not the remote cause, to the actual state of the party, and not to the cause which remotely produced it. Many species of insan-

person was present at the occurrence; for his account of it was no part of the *res gestae*." Greanleaf Ev., Sect, 149, and also State v. Tilly, 3 Ired. 424.

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ity arise remotely from what in a moral point of view is a criminal neglect or fault of the party—as from religious melancholy, undue exposure, extravagant pride, ambition, &c; yet such insanity has always been deemed a sufficient excuse for any crime done under its influence."—[5 Mason, 28.] The man was acquitted.

Concerning *intent*, *premeditation*, and *malice* as ingredients of the crime of murder, as to whether they are removed by intoxication, the following opinions and rulings in leading cases by the presiding judges may be presented.

It was held that "intoxication, when existing to a sufficient extent to prevent deliberation, lowers the offense to the second degree."—[Com. v. Jones, 1 Leigh, 612; Com. v. Haggerty, Lewis, C. L., 408; Pirtle v. State, 9 Humph, 664. Competent authority declares the opinions in these cases not law; some are overruled.

Judge Lewis, C. L., 405, says, "Except in the case of murder, which happens in consequence of actual or attempted arson, rape, robbery, or burglary, a deliberate intention to kill is the essential feature of murder in the first degree. When this ingredient is absent, where the mind, from intoxication or any other cause, is deprived of its power to form a design with deliberation and premeditation, the offense is stripped of the malignant features required by the statute to place it on the list of capital crimes; and neither courts nor juries can lawfully dispense with what the act of the assembly requires." (Penn. Statutes governed the opinion.)

In a case in Tennessee, Green, judge, said: "Voluntary intoxication is no excuse for the commission of crime; on

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the contrary, it is considered by our law as an aggravation of it*; yet if the defendant was so deeply intoxicated by spirituous liquors at the time of the killing, as to be incapable of forming in his mind a design deliberately and premeditatedly to do the act, the killing under such a state of intoxication would only be murder in the second degree."

Judge Reese, who delivered the opinion of the court in the case of Swan v. the State, 4 Hump. R. 136, said: "But although drunkenness in point of law constitutes no excuse or justification for crime, still, when the nature and essence of a crime is made to depend by law upon the peculiar state and condition of the criminal's mind at the time, and with reference to the act done, drunkenness, as a matter of fact, affecting such state and condition of the mind, is a proper subject for consideration and inquiry by the jury. The question in such case is, What is the mental status? Is it one of self-possession, favorable to a fixed purpose, by deliberation and premeditation, or did the act spring from existing passion, excited by inadequate provocation, acting, it may be, on a peculiar temperament, or upon one already excited by ardent spirits? In such case it matters not that the provocation was inadequate, or the spirits voluntarily drank; the question is, Did the act proceed from sudden passion, or from deliberation or premeditation? What was the mental status at the time of the act, and with reference to the act? To regard the fact of intoxication as meriting consideration in such a case, it is not to hold that drunkenness will excuse crime, but to inquire whether the very crime which the law defines and punishes has been in point of fact committed."

*Held to be an error by the supreme court, and decision reversed; Halile v. State, 11 Humph., 154. [See further in this paper the case noticed.]

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In this, the design of the court was not to indicate to the jury the fact that a party under the influence of liquor to such a degree that he could form no purpose of mind would be absolutely incapable of exercising deliberation and premeditation, but that if deliberation and premeditation were established, as an element of the case, drunkenness would not affect the issue.

Judge Turley, who gave the opinion of the court in the case of Pirtle v. the State, said: "It will frequently happen necessarily, when the killing is of such a character as the common law designates as murder, and it has not been perpetrated by means of poison, or by laying in wait, that it will be a vexed question whether the killing has been the result of sudden passion, produced by a cause inadequate to mitigate it to manslaughter, but still sufficient to mitigate it to murder in the second degree, if it be really the true cause of the excitement, or whether it has been the result of premeditation and deliberation; and in all such cases whatever fact is able to cast light upon the mental status of the offender is legitimate proof: and among others, the fact that he was at the time drunk; not that this will excuse or mitigate the offense, if it were done willfully, deliberately, maliciously, and premeditately; (which it might well be, though the perpetrator was drunk at the time,) but to show that the killing did not spring from a premeditated purpose, but to sudden passion, excited by inadequate provocation, such as might be reasonably expected to arouse sudden passion and heat, to the point of taking life, without premeditation and deliberation."

"Mere intoxication is no excuse for crime. Evidence of it may be admissible to the question of malice."—[Kelly v. the State, 3 Smedes & Marshal, 518.

Further upon *intent* and *malice*: The State v. Cross, 27

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Missouri, 332; Golden v. the State, 22 Georgia, 527; the same, Jones v. the State, 29, 594; Mooney v. the State, 33 Alabama, 419; O'Herrin v. the State, 14 Indiana, 420; Dawson v. the State, 16 Indiana, 428.

In Rex v. Day, 3 Paris & Fonbl. Med. J. 140., it was held, "intoxication is no excuse for crime," and the defendant, who in a paroxysm of drunkenness rose in the middle of the night and cut the throats of his father and mother, ravished the servant-maid in her sleep and aferwards murdered her, was executed for these crimes.

"If a person while sane and responsible makes himself intoxicated, and while in that condition commits murder by reason of insanity, which was one of the consequences of intoxication and one of the attendants on that state, he is responsible."—[United States v. McGrue, 1 Curtis C. C. I; also the People v. Robinson, 2 Parker C. R., 235; the People v. Hamill, same Rep. 223; the State v. Harlowe, 21 Missouri, 446; Com. v. Hawkins, 3 Gray, 463; Mercer v. the State, 17 Georgia, 146; Carter v. the State, 12 Texas, 500; the People v. Willey, 2 Parker C. R., 19.

As to *delirium tremens*, "State v. Sewall, 3 Jones' Law, 245; the People v. McCann, 3 Parker C. R., 272; Macconehey v. the State, 5 Ohio, 77.

From all these cases, what are we to conclude? With Roscoe, Criminal Evidence page 909, Wharton, Cr. Law, 3d Ed., 92, and the multitude of other authorities, shall we say, "Intoxication is no defense as to the fact of guilt?" Shall we say with the old English writer, "A drunkard who is *voluntarius demo*, hath no privilege thereby, whatever ill or hurt he doth, his drunkenness doth aggravate it." (Coke's Littleton, 46). We believe the views of Guy are sustained in the most recent American cases. They have been allowed to pursue their way, the question of drunkenness having no bearing upon the final issue,—and upon just grounds.

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In the case, Cornwall v. the State of Tennessee, Mar. & Ser., 147, 1849, the point is well set forth:

"A contrary doctrine ought to be forced out of circulation, if it has obtained it, by every friend to virtue, peace, quietness, and good government. All civilized governments must punish the culprit who relies on so untenable a defense; and in doing so, they preach a louder lesson of morality to all those who are addicted to intoxication, and to parents and guardians, and to youth and to society, than comes with cold abstract from pulpits. To the justice and correctness of these remarks, all who have had experience in the annals of crime can bear testimony. It is only at the present term of the court that we have seen it proved that an offender, a short time before the perpetration of a horrid murder, inquired of a grocery keeper what kind of liquor would make him drunk soonest, and swallowed thereon a bumper of brandy. We have had three cases of murder, and one of an assault with intent to murder, before us at this term of court, in every one of which there are convictions in the circuit court and affirmances in this; every one of which is of aggravated character, and in every one of which the perpetrator, at the time of the commission of the offense, was laboring under *dementia affectata*, drunkenness; an awful illustration of the necessity of holding to the law as it has been adjudged upon this subject. There is, in our judgment, no conflict of authority upon this point of law; every case which may have such appearance, being a case of exception on the application of the rule, or a case of no authority upon the subject."

The same is held in Kelly v. State, 3 Smedes & Marshal, 518, in which case the question was of *intent*. The Court of Error and Appeals (Miss.) laid down the law, as being well established, that drunkenness is no excuse for crime,

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although sometimes held proper for consideration, where the sole question is whether the act done was premeditated or done only with sudden heat or impulse, which might be as truly said of anger or any other excitement arising from sudden provocation or peculiar cirumstances; but not much importance was attached to it, as might be conceived from the presumption which was equally great, that the design might have previously existed, and intoxication have been employed to nerve the criminal to the commission of the crime; that the law discriminates between the delusion of intoxication and the insanity which it may ultimately produce.

If drunkenness, they said, was to be considered an excuse for crime, there would be established a complete emancipation from criminal justice.—[Wharton in W. & S., Sect. 93.

We may conclude then that the difference of opinion between jurists is rather upon the rule of law governing the *evidence* than upon the legal relation of the crime. Thus, if alleged that premeditation, intent, and malice existed, and a doubt arose as to whether the act done was the result of a deliberate purpose, the best authorities do not admit that proof is admissable of drunkenness, that, taken in connection with all the other facts and circumstances, the jury can determine whether the case is one of murder in the first or second degree.* If all the ingredients of murder in the first degree exist previous to the killing, except the act itself, as intent, premeditation, malice, then drunkenness, however great, will not be admitted as a plea that the defendant was too drunk to entertain them. These ingredients are questions of *fact*, and as any other fact, are subjects of legitimate

*An article I have written for the *Lancet and Observer* (published by E. B. Stevens, M. D., 319, Elm Street, Cincinnati, Ohio,) contains a clear statement of this question with authorities upon it.

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inquiry; the circumstances, manner of killing, and evidence from other sources, must all go to the jury together, leaving them to determine the degree of guilt, after having determined these facts.

In Halile v. State, 11 Humph., 154, it is said: "Any fact that will shed light upon this subject may be looked to by them (the jury), and may constitute legitimate proof for their consideration. And among other facts, any state of drunkenness being proved, it is a legitimate subject of inquiry, as to what influence such intoxication might have had upon the mind of the offender in the perpetration of the deed. We know that an intoxicated man will often, upon a slight provocation, have his passions excited and rashly perpetrate a criminal act. Now, it is unphilosophical for us to assume that such a man would in the given case be chargeable with the same degree of premeditation and deliberation, that we would ascribe to a sober man, perpetrating the same act upon a like provocation. It is in this view of the question, that this court held, in Swan's case, and in Pirtle's case, that the drunkenness of a party might be looked to by the jury, with the other facts in the case, to enable them to decide whether the killing was done deliberately and premeditatedly. But his Honor, the circuit judge, told the jury that drunkenness was an aggravation of the offense, unless the defendent was so deeply intoxicated as to be incapable of forming in his mind a design deliberately and premeditatedly to do the act. In this charge there is error, for which the judgment must be reversed. Reverse the judgment and remand the case for another trial."

We ought not to close this paper without a direct statement of the relations of dipsomania to common drunkenness, before the law. Of the works upon criminal law

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Alison* presents the clearest views upon the subject. They are, that the law makes no distinction between dipsomania and the various states of ordinary drunkenness. Juries do sometimes make such distinctions in their verdicts. He reports cases.

Taylor adds to this, that if drunkenness were admitted as an excuse for crime three fourths of the crimes committed would go unpunished.

The general tenor of cases is that dipsomania does not exculpate more than common drunkenness; that it is the result of habitual indulgence, and that the greatest difference between dipsomaniacs and common drunkards is, that they are impelled to drink from different degrees of strength of the desire. Both have a thirst for drink, and both when it is encouraged attain to a point beyond which retreat is impossible.

The dipsomaniac, if relieved from all legal obligation and restraint, would open the door to all grades of offenders who stand upon the middle ground between insanity and crime. The fact that true dipsomaniacs in their sober moments take measures, as the fit approaches, to seclude themselves and otherwise protect others from annoyance and injury, in a great majority of cases, shows that they abandon themselves to their passion, when it is established as the libertine, the gambler, and other victims of "*moral mania*" (?) do to their impulses.

With this we close our article. We regret that we allowed ourself to delay the preparation of it until three or four days before the meeting of the society. Much of this time was occupied with our practice, leaving too little time to digest and put in a desirable shape the matter we desired

*Criminal Law of Scotland.

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to present. Our object has been to give an outline of the *literature* of the subject, rather than a discussion of the true principles involved—or the ground of our own opinions. In our paper upon *monomania* we shall aim to discuss the grounds for the views, *pro* and *con*, of the subject, rather than the literature of the subject, but will present briefly the views of authors, that our paper may represent the subject clearly, and not seem based wholly upon our own opinions.

In this paper, lengthy as it may be, and to those versed in the subject, we hope, without being prolix, we have established:

1st. That there is a dipsomania.

2d. That the condition is a *physical one.*

3d. That the symptoms are so unvarying that all authors agree in their description of them; and that authors use nearly the identical language in describing the condition, that was used from 1817, to 1825, when the disease was first pointed out.

4th. That the law makes no distinction between the relation of the dipsomaniac and the common drunkard, to full legal responsibility.

We hope those whose, interests prompt them to study the subject will find fully represented the classic writers extant.

Of the German: Hoffbauer, Casper, Bruhl-Cramer, Griesinger, Salvatori, Erdman, Fuchs, &c.

Of the French: Falret, Dagonet, Morel, Marc, Marce, Tardieu, Esquirol, &c.

Of the English and American: Winslow, Tuke, Hutchinson, Ray, Wharton, Story, Taylor, &c. We have not had

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time to consult the various works upon evidence and criminal practice, with the view of presenting their opinions upon the points of evidence, as *the taking into consideration the state of intoxication*, but preferred to take from our notes made from state Reports, the opinions given in leading cases in which this view was presented by the court. We have given these *pro* and *con*. It will be seen by the footnotes, that the opinions of the first were overruled, not being regarded as law. In our work upon Medico-Legal Criminal Procedure we will give a reference to all cases contained in the State Reports, for and against the consideration of the evidence in question, so that those having occasion to refer to them can readily do so, if they have access to the Reports. In all cases tried in 1873, we have noticed the court has ruled with Alderson, in Rex. v. Meakin, 7 C. & P., 297: "*drunkenness can have no effect on the consideration of the malicious intent of the party;* and in the same case, "If a man chooses to get drunk it is his own voluntary act. * * * That voluntary species of madness which it is in a party's power to abstain from, he must answer for." And also in Rex v. Carrol, 7 C. & P., 145, in which Parks overruled the precedent established in Rex v. Grinley, by Holroyd's ruling.

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CASES

OF

Disease of the Nervous System,

WITH COMMENTARY.

BY

ROBERTS BARTHOLOW, A. M., M. D.

CINCINNATI, OHIO.

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Cases of Disease of the Nervous System,

WITH COMMENTARY.

BY

ROBERTS BARTHOLOW, A. M., M. D.

A paper intended for presentation to a body of practical physicians such as compose our State Medical Society, should represent, as I conceive, the technical professional work, or original research of its author. Accordingly, instead of a report constructed out of contemporary literature, I have concluded to offer some cases of nervous diseases which have occurred in my own practice, together with a commentary on some of their most salient points. These cases include the subjects of aphasia, syphilitic diseases of the nervous system, and progressive muscular atrophy.

APHASIA.

The existence of a distinct center of the faculty of language, although not absolutely proved, a number of positive facts renders exceedingly probable. The precise limitation to the third left frontal convolution attempted by Broca, or to the walls of the left Sylvian fissure as suggested by Meynert, may not in the present state of our knowledge be

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considered anything more than plausible conjecture. It were better, probably, to hold with Hughlings-Jackson that the district of cerebral matter supplied by the left middle cerebral artery, is most intimately concerned in the function of language, for this will include all that region of the anterior and middle lobes which have from the time of Gall* been supposed to be the seat of this faculty.

Much of the confusion which has arisen in regard to the position of the language-center, is due to the various applications of the term *aphasia.* The distinction is not clearly made, in general, between aphasia due to disease of the vesicular neurine in which the memory for words appears to be located, and those difficulties in the utterance of words, due to interruption by disease to the passage of the motor impulse from the language center to the vocal apparatus.

A conspicuous example of the very indefinite manner in which the term aphasia is used, is afforded in the report of a case of lesion situated in Broca's convolution made by Dr. J. Batty Tuke, F. R. C. P., and John Fraser, M. B., C. M.† "The posterior half of the third left frontal convolution was completely destroyed," in this case. The reporters regard it as demonstrating the incorrectness of the view now generally accepted, locating the faculty of language in the third left frontal convolution. They define aphasia, however, as the "co-ordinating function which regulates speech," and apparently loose sight entirely of the existence of amnesic aphasia. Bouillaud, Dax, Broca, and others who maintained that the memory for words has its seat in the posterior part of the third left frontal convolution, mean

*"I regard as to the organ of verbal memory that part of the brain which rests on the posterior half of the roof of the orbit." Gall's Works, Translated by Winslow Lewis, M. D., Vol. V. p. 11.

†The Journal of Mental Science, April 1872.

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by aphasia, loss of the faculty of language in consequence of disease of this part. That the case of Drs. Tuke and Frazer exactly illustrates the doctrine of aphasia as now generally held, is evident in the following quotation from the history of the case:

"Her hesitancy of speech was most marked when she came to a noun, the hyatus varying in duration according to the uncommonness of the word. Latterly she could not record the commonest terms, and periphrases or gestures were used to indicate her meaning." As the disease advanced, the difficulties in speech became more pronounced, until she was unable to express her ideas in words. Plainly this was a case of aphasia—loss of the faculty of language, of the memory for words, and not a case of ataxic aphasia —or loss of the co-ordinating faculty of the muscles concerned in articulation of words. This has been clearly pointed out by Wilks in some comments on this case:

"Most medical men understand by the term, aphasia, *amnesic aphasia*, the case where there is no marked paralysis of the organs of vocalization, but the memory of words, with the object of expressing ideas in language, is gone. The patient may understand what he hears or reads, but he can not express himself in language until the word is suggested to him, when he readily recognizes it and repeats it. * * * Should the convolution be alone affected and aphasia occur without hemiplegia, it would be an instance eminently selected to prove the correctness of Broca's theory. This seems to be exactly the case we have here."*

The interruption in the transmission of the motor impulse from the language-center to the vocal apparatus, may be caused by disease in the central gray matter, in the cor-

*The Journal of Mental Science, July, 1872.

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pus striatum, in the crus cerebri, or in the medulla oblongata. Loss of the faculty of language may, further, occur, from defect in the olivary bodies the co-ordinating center for the muscles concerned in vocal expression. It is obvious therefore that three forms of loss of the language faculty may exist:

Amnesic Aphasia.

Paralytic Aphasia.

Ataxic Aphasia.

In amnesic aphasia, the defect must be strictly limited to the vesicular matter in which the memory for words is situated. All other forms of expression may be retained, the mental conception may be accurately defined, but the store of words for giving vocal form to the ideas has been obliterated. It is rare, indeed, to find a perfect case of amnesic aphasia, for the destruction of the one faculty is usually associated with more or less impairment of the others.

The cases of paralytic aphasia are very numerous. These arise from embolism of the middle cerebral artery, apoplectic extravasions in the white matter and in the corpus striatum, and tumors—aneurism, glioma, gummata, and other forms. The very common association of right hemiplegia and asphasia is now perfectly well known. In these cases an interruption exists in the communication between the language-center and the vocal apparatus.

In the ataxic form of aphasia there is no disorder in the language-center nor in the transmission of the motor impulse through the motor channels to the olivary bodies, but owing to disease of this part of the cord, the muscles concerned in the production of articulate language can not be combined to execute the varied movements necessary. As Schroeder Van der Volk supposed that the olivary bodies were intimately concerned in the function of spoken lan-

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guage, he has been interpreted to mean that this is the real language-center. Undoubtedly, he did not refer the idea or mental conception, and the memory for words to the olivary bodies; only the mechanism of vocal expression.

Cases in illustration of these several forms of aphasia, have occurred in my practice during the past year.

CASE 1.—AMNESIC APHASIA.

Capt. C———, Portsmouth, Ohio, was referred to me by Dr. Cotton. He is an exceedingly well-preserved man of 72; a civil engineer by profession. One morning in October last his friends who came into his office discovered that he was unable to speak, but he otherwise appeared as usual. No departure from his ordinary state of health had been perceived previous to this attack. For seven years he had suffered from an obstinate eczema of the left leg, for the relief of which he had used a great variety of local applications. Some of these lotions probably contained lead. A year previously to the sudden loss of language the eruption had much improved, and had indeed ceased to give trouble, although traces of it still existed at its old site.

Status praesens. When he presented himself at my consultation rooms in company with a friend, he appeared to be in excellent health. My notes of the case are as follows:

Nutrition good, and functions of vegetative life well performed. No defects of vision, hearing, or taste. Sensibility as measured by the æsthesiometer the same on the two sides of the body, and normal for his age. The movements of the tongue perfectly unobstructed, and its tactile sensibility unimpaired. No defect of the vocal organs.

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Motility of the extremities apparently normal. His locomotion is without any obvious difficulty or embarrassment, and no disorder of co-ordination is perceptible. Tested by the dynamometer, however, there is discovered a difference of muscular power on the two sides; the right being the weaker, although he is right-handed. Whilst with the left hand he readily moves the index over the 100 degrees of the scale, with the right he can only force it to 80 degrees. This difference in muscular power is not perceptible in the ordinary movements of the hand. His appreciation of temperature is unaffected. To the galvanic and faradic currents, his muscles respond energetically.

To questions which require merely "yes" or "no," he replies correctly. When he attempts to construct a sentence, he makes violent efforts; his face becomes suffused and the veins swell, but he only succeeds in producing an inarticulate mumbling, and at length gives up the contest with a sad shake of the head and a deep sigh. To my request to write out a history of the eruption on his leg, he produced the following after a most vigorous effort:

"about seven ago troubled me no more about a year since."

This was in part a mere repetition of some words let fall by his friend when giving me the account written above. At my dictation he wrote the following sentence from "The Nation:" "German Notions of our Federal Constitution." He read with ease, and correctly, from a book or newspaper. When a sentence was given him, he could repeat it without difficulty.

Commentary. The case then is one of amnesic aphasia—loss of the memory for words. The degree in which the muscular power is impaired does not necessarily indicate

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lesion of the motor apparatus—for disease strictly limited to the gray matter may affect motility to a slight extent, by pressure or by transference of irritation. In this case muscular power is too slightly diminished to permit the conclusion that the result is dependent on apoplectic extravasation into the corpus striatum. It is probable that the lesion really consists in chronic arteritis of that branch of the middle cerebral supplying the language-center, giving rise to thrombosis of the vessel, consequent arrest of blood supply, and loss of function. The absence of hemiplegia, and of any interference in the movements of the tongue, demonstrates that the motor apparatus concerned in the production of articulate language is not the seat of the lesion.

Observe that Captain C—— has lost completely his memory for words, except the monosyllables "yes" and "no;" that he can use these two words aptly in reply to questions; that he can repeat from dictation any set or arrangements of words and can read as he informs us with a correct appreciation of the meaning of the text. Yet in a moment afterward, he has entirely forgotten the words, and although he make never so violent an effort, can not recall them and communicate with those about him. The defect is not in ideation. It is difficult for us to conceive of an idea apart from form or language; but all are familiar with the fact that sometimes words do not occur to us to give expression to our mental conceptions; at the critical moment the word or words we wish to use have disappeared out of the mind. In the amnesic form of aphasia this defect extends to all words and is permanent while the patient is still able to generate ideas.

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Cases of the kind and degree of that I have just reported are by no means uncommon. Gairdner has reported one exactly parallel. The case narrated by Tuke and Frazer as regards the defect of language, is the same. The patient, their report states, could read, and could repeat readily from dictation. Forbes Winslow alludes to a patient who "in consequence of an injury to the brain forgot how to *read* but was still able to write fluently and correctly;" and he mentions another case, a patient of Dr. Hertz, who having been palsied was unable to speak, but could read printed and written characters. "He strenuously exerted himself to speak," the account states, "but an unintelligible kind of murmur was all that could be heard, and yet he read aloud with facility."*

It would be a labor of supererogation to multiply instances of this kind, to illustrate the amnesic form of aphasia. I should not fail, however, to call your attention to the case of Davis B. Lawler, of Cincinnati, whose testamentary capacity became the subject of a protracted legal contest, in consequence of a mental defect of this kind. Mr. Lawler, 82 years of age, had experienced severe attacks of vertigo, in one of which he fell and struck his head with violence. After recovering from the immediate effects of this injury he was found to have lost the knowledge of printed or written characters, although he was able to converse on ordinary topics with tolerable ease. Notwithstanding this inability to read, he was able to sign his name, to write a check, and to indite a short note, but he was afterward entirely unable to read what he had written.

*Obscure Disease of the Brain and Mind. pp. 251-2.

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In other words, he had amnesia to that degree, that he could not remember the characters by which ideas are communicated. These acts in connection with written language, apparently intelligent, seemed to me therefore to be automatic in character, without the direct supervision of the higher centers in which the knowledge of printed or written characters, may be located. Without entering into further speculation regarding the nature of the mental operation involved, it will suffice to state that it is not more difficult to conceive of the loss of vocal language coincident with the preservation of the power of written expression, than of the reverse state, the loss of the knowledge of written or printed characters coincident with the preservation of the power of vocal expression.

CASE 2.—PARALYTIC APHASIA.

M. K———, a gentlemen of this city, æt. 54, and by occupation a builder. Six months ago when in apparently most robust health, was suddenly attacked on his door step with apoplexy. He did not loose consciousness entirely, but was much dazed and confused, and was entirely unable to communicate by words or writing with those about him. He was paralysed on the right side, and his tongue and face participated. The loss of memory for words continued three weeks, when he began to recall them and to speak although with great difficulty. The hemiplegia also improved. At the end of six months, he was able to walk freely, with a slight dragging in his right leg, and to converse very well although frequently at a loss for words, and with a perceptible halt in the movements of his tongue.

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At the present time hardly any defects are visible. He presents an appearance of vigorous health, converses with nearly as much ease as normal, and walks long distances without difficulty, only having a peculiarity in his gait due to the paretic state of of the muscles on the right side. He experiences, however, great difficulty in the composition of a letter. He uses the right hand in the ordinary way for ordinary uses; hence his difficulty does not consist in control of the muscles, but in remembering words to express his ideas.

Commentary. We can have no difficulty here in locating the lesion. The hemiplegia and the recovery of the function of speech as the paralysis improved, indicate the left corpus striatum as the seat of the hemorrhagic extravasation. It must have been very limited in extent; otherwise restoration of function could not have taken place so early and have proceeded so far. The injury was sufficient however to prevent for a time the passage of the motor influence to the organs of speech. When the means of communication were restored, it was found that the memory for words had not been obliterated. It is true some difficulty of speech is yet experienced but this defect is not relatively greater than the paresis of the leg muscles. Some conducting fibres have been destroyed or, are yet disturbed in function: if it were not so, the paralysis would have disappeared and the faculty of speech been restored to its normal condition.

CASE 3.—ATAXIC APHASIA.

A steamboat steward, aged fifty, of great size and powerful muscular development, was admitted to the Good

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Samaritan Hospital in my service, for an affection of speech. As is frequently the case in men who follow the occupation of steamboatmen, our steward had been rather dissipated. He had been given to strong drink, and some years ago he began to experience difficulty in speech and had attacks of vertigo in which he staggered and sometimes fell. A few weeks ago he had a convulsion on the bridge, and lost consciousness for some days. Since this time he has had almost daily attacks of vertigo; passing occasionally into insensibility and clonic convulsions. The following were the symptoms observed when he came into the hospital.

His eyes are large and staring, giving him a scared expression. His gait is rolling and unequal, but no defects of co-ordination are observable, and no paresis of the muscles exist. His speech is thick and almost unintelligible. He has special difficulty with the words requiring the simultaneous use of the tongue and lips. He cannot protrude his tongue, nor can he place the tip of the organ against the upper teeth and the roof of the mouth. The tongue muscles are wasted and the organ is small. In mastication he finds difficulty in disposing of the alimentary bolus which tends to lodge in the cheek. Saliva dribbles more or less from the mouth, but the lips seem to be unaffected. The tactile sense of the tongue appears to be unimpaired. He distinguishes readily between salt and sugar placed on the tongue. There is no paralysis of the palate nor difficulty of deglutition. Such are the objective signs. Subjectively, he complains of vertiginous sensations in the head, and of an influence proceeding from the extremities to the brain—aura. This influence he likens to a wave of warm air. When it reaches the head, the vertigo increases

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so that he is unable to stand, and sometimes falls into a convulsion. He has, consequently great apprehension, when the peculiar sensation begins in the extremities.

His mental faculties seem to be unimpaired. He exhibits an acuteness of mind and vigor and expressiveness of language quite unusual in one in his position. He has, of course, great difficulty of utterance, and indistinctness, but translated from the obscurity thus occasioned, his remarks indicate a perfectly normal understanding. His functions generally are well performed. He has a good appetite, and good digestion, and there is no disorder of the urinary or genital organs.

Commentary. As the motor nerve of the tongue—the hypoglossal—has its apparent origin from the medulla oblongata between the anterior pyramid and olivary body, and as the functions of the glosso-pharyngeal and the pharyngeal branches of the pneumogastric, are not affected, it must be concluded ihat the lesion in this case involves the olivary bodies. The wasting of the tongue muscles, to which the hypo-glossal is distributed, is probably not in consequence of the paretic state of these muscles but is due to an affection of the trophic, the multipolar ganglion cells of the anterior pyramid. The vertigo and the epileptiform siezures are appropriate symptoms of a disease occuping this position. As is well-known these symptoms are constantly present in cases of aneurism of the vertebral arteries of sufficient size to impinge on the medulla oblongata. The lesion is probably of a coarse kind. In a clinical lecture on this case, I ventured to affirm that the lesion was syphilitic, and prescribed full doses of the iodide of potassium. As marked improvement followed this treatment, I felt myself justified in the conclusion to which I had come.

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SYPHILITIC AFFECTIONS OF NERVOUS SYSTEM.

The relatively frequent occurrence of syphilitic affections of the nervous system, their rapid progress, and their curability under appropriate treatment, render their early recognition a matter of extreme importance. Various forms of disease may result from syphiloma of the brain, of the cord, and of the nerves. The following have occurred under my observation: hemiplegia, progressive locomotor ataxia, paraplegia, neuralgia, epilepsy, affections of vision, and symptoms due to tumor.

It is a characteristic quality of syphilitic nervous diseases, that they do not pursue the orderly and consistent course appropriate to those spontaneous affections whose manifestations they imitate. This will be more evident when I come to the narration of some cases.

The lesions by which syphilis manifests itself in the brain and cord, are very various. In the *dura mater* it appears as a *pachy-meningitis externa* and *interna*, the former leading to the formation of exostoses, caries, and circumscribed gummatous outgrowths, and the latter giving rise to gummatous masses of a fibro-caseous consistence. The usual sites of the gummatous masses are the convexity of the hemispheres, and the base, especially about the *sella turcica*. Wagner* describes a case in which gummata occupied the *falx longitudinalis*. Frequently these masses at the base produce very characteristic symptoms by interference with the functions of the cranial nerves, especially the third, fourth, and fifth nerves. They also include arteries, giving rise to thrombosis, cases of which have been reported by

*Archiv der Heilkunde, 1863, p. 162 Schmidts' Jahrbücher.

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Bristowe,* Passavant,† Von Graefe,‡ and others. In the *pia mater* syphilitic disease appears in the form of small granulations, exudations and condyloma. Similar lesions occur on the *arachnoid*, in which case mental disturbance—mania with paralytic symptoms—may be present. According to Virchow,** the most characteristic affection of *pia mater* is the gummy tumor, and the favorite site the region behind the optic commissure, the pons, and the peduncles of the cerebellum. Gummata also occur in the brain substance either as diffused masses or well defined tumors, and in either case may be mistaken for tubercle.†† Besides these lesions which have been repeatedly demonstrated *post-mortem* there are no doubt, fugitive affections of the brain, which leave no trace after death corresponding to the milder syphilides which attack the skin, or the condition is one simply of "cerebral congestion," as suggested by Keyes.‡‡

When symptoms occur very early in the history of a case there is reason to believe that the lesion is slight, just as the first constitutional symptoms on the skin may be nothing more than a roseola. The more remote from the period of infection the symptoms of disease of the nervous system make their appearance, and the more serious have been the so-called tertiary lesions of external parts, the more profound will be the structural alterations occurring in the brain and cord.

Symptoms of disease of the brain and cord may appear very early—Keyes says, "within the first few weeks of an

*Transactions of the Pathological Society, Vol. x. p. 21.

†Virchow's Die krankhaften Geschwülste, Zweiter Band, Berlin, 1865, p. 451.

‡Die Krankhaften Geschwülste, etc., op., cit.

**Ibid. p. 453.

††Virchow, Die krankhaften Geschwülste, Zweiter Band, Berlin, 1864-65, T. 444-460.

Föster Lehrbuch der pathologischen Anatomie. Neunte vermehrte und verbesserte Auflage, von Dr. Fr. Siebert, Jena, 1873, 3, 443.

‡‡New York Medical Journal, November, 1870.

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infecting chancre, or at any period later during the life of the individual." In a case of hemiplegia with consecutive aphasia reported by J. A. Vedrènes,* headache and drowsiness occurred in two weeks, but the hemiplegia and aphasia not until two years later. After a period of even forty years of exemption from syphilitic symptoms, lesions of the nervous system may develop, instances of which have been reported by Buzzard and others. The most usual period after infection is about two years. It is a curious fact that cases undoubtedly occur, in which no other secondary or tertiary symptom has appeared, and some years afterward cerebral disease manifests itself. This was the case in one of my patients. Hutchison† reports a case in his valuable paper—case III—in which hemiplegia occurred six years after an indurated chancre, which was not followed by secondary symptoms, and another case—case V—in which left hemiplegia followed in four years, a chancre, without intermediate secondary. Clifford Allbutt‡ agrees with other authorities in the statement that there is no fixed period for the appearance of syphilis in the nervous system, and he believes that special plans of treatment do not affect the result. Prof. Diego Coco,** also, asserts that "syphilitic affections of the nervous system have no constant period for their appearance."

If brain and spinal symptoms due to syphilis occur in a long period of time after the primary disease without any intermediate, secondary, or tertiary symptoms, how shall we recognize their origin and cause? It is obviously, of the first consequence to the safety of the patient that the

*Schmidt's Jahrbücher der gesammten Medicin, Vol. 144, p. 162.

†American Journal of the Medical Sciences, July, 1871, p. 86.

‡St. George's Hospital Reports, Vol. iv., 1869.

**Il Morgagni. Quoted in Schmidt's Jahrbücher der gesammtan Medicin, Bd. 138, Heft. 1, S., 25.

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nature of the lesion be discovered. Dr. G. Owen Rees* thinks that such syphilitic diseases as hemiplegia and paraplegia, can be recognized by the fact that they usually occur as the result of some sudden and violent movement, or of great fatigue, but Keyes,† oh the other hand, regards the occurrence of hemiplegia without loss of consciousness and without decided perturbation of any kind as exceedingly significant of syphilitic affection of the brain. My own experience is in accord with Keyes. Rees, however, gives one other point of diagnosis of great importance, namely, the irregularity in the development of the symptoms. This want of harmony in the evolution of the symptoms, has been well stated by Clifford Allbutt: "Syphilis seldom picks its way daintily along beaten tracks, and seldom makes a quiet nest for itself like another tumor, but blunders carelessly into all and any part just as they come. A mass in the hemispheres may give rise to but little apparent palsy, or to no break in the commoner relation of things until the patient dies suddenly, after a few fits and a coma; on the other hand, a minute tract of inflammation by snaring a nerve in its run may cause at once a local palsy of an annoying or alarming kind. A thin film of surface irritation again, on the hemispheres may set up epileptic fits which may be associated with another bit of mischief, strangulating a special-sense nerve, or causing some other distant local palsy, say perhaps in the cord, while the arteries also may be silently shrivelling and thickening, until one is blocked up, and a hemiplegia strikes down a young man years before his time."‡

Beside the irregularity in the manifestation of the symptoms, the diagnosis in any given case may be aided by the

*Guy's Hospital Reports, Vol. xvii, 1872.
†Supra.
‡Op. Cit. St. George's Hospital Reports.

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character of the pain in the head or back. The pains are either nocturnal wholly, or, are greatly increased at night. Headache and vertigo, precede and often for a long time, the more serious symptoms of brain affection. Coco, Wagner, Vedrènes, Allbutt, Gros et Lancereaux, Lefeuvre,* Lagneau Fils, Keyes, and others agree on this point. Together with headache and dizziness very significant signs are the occurrence of dilitation of the pupil, strabismus convergent or divergent, ptosis, facial paralysis, trigeminal neuralgia. These symptoms indicate of course gummatous deposits and consequent interruption of the functions of these important cranial nerves. Cases of these affections have been reported by Victor de Méric,† Lawson Tait,‡ Allbutt, Lefeuvre,** Coco,†† and others. When headache and dizziness lasting for some time are followed by paralysis of a cranial nerve or nerves, or if epileptiform attacks, or hemiplegia occur, the subject of these lesions being adult, or middle-aged, there are good reasons for suspecting syphilitic lesion of the brain. The suspicion will of course, become certainty, if a history of syphilitic infection exist. The fact that a long interval of time has passed since the appearance of the primary disease, should not mislead.

SYPHILITIC HEMIPLEGIA.

A young man æt. 32, clerk by profession. Had a soft sore which was treated by cauterization, and black wash. During the year had secondary accidents, and mucous patches, for which he received, I believe, some mercurial

*Bulletin General de Therapeutique, lxx., March 30, 1866.
†British Medical Journal, Jan. 8 and 15, 1870.
‡The Medical Times and Gazette, Feb. 27, 1869.
**Bulletin General de Therapeutique, L., xx., p., 266.
††Il Morgagni in Schmidt's Jahrbücher, Bd. 138, Heft., 1.

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treatment. When in the enjoyment of apparently good health, about sixteen months after the sore, he suddenly became hemiplegic. He was, at the time of the seizure, sitting in a wine-house engaged in a game of dominoes, and was not aware of what had happened him until he arose up and attempted to walk. The paralysis was of motion and not of sensation, and involved the left side of the face as well as both left extremities. Speech was affected through the paretic condition of the tongue, but he was not aphasic. He was treated by the iodide of potassium, but the result is unknown, as he passed from under my observation.

Commentary. The notable points in this case are the sudden explosion in the morbid action, and the occurrence of hemiplegia without loss of consciousness. The lesion could hardly, therefore, be a gummatous mass in the corpus striatum. Most probably syphilitic arteritis had existed, and thrombosis or hemorrhagic extravasation occurred. The age of the subject, the syphilitic history, the suddenness of the symptoms, and the preservation of conciousness, are facts quite in accord with what is known of the behavior of syphilitic hemiplegia.

SYPHILITIC BRAIN TUMOR.

A very common form of cerebral mischief are the gummatous masses springing from the dura mater. Several remarkable cases of this kind have happened under my observation. Three years ago, in a paper on "Intra-Cranial Tumors"* which I had the honor to present to this Society, I gave details of a case of this kind. For the purposes of this paper a brief abstract of this case only, will be necessary:

*Ohio State Medical Society Reports, 1870.

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Case 1.—A soldier discharged from the U. S. military service, æt. 27. Had undoubtedly been syphilised when serving in California. Came into the hospital for headache of a very violent and persistent kind, and a condition of general malaise.

"*Condition on Admission.*—He is well nourished and of good muscular development. He walks like an intoxicated man, having a difficulty in maintaining the vertical station. He attributes this to weakness. His left eye is partly closed and is prominent. He uses the right in vision only. It is ascertained that he has ptosis and diplopia and divergent strabismus. The hospital record states that the pupils are of unequal size, the left being dilated, and, there is reason to believe, motionless. Unfortunately no record was made, if observations were, of the state of sensibility of the cornea and face. His principal complaint is of pain in the head of a very violent character. He refers the pain to the base of the skull and left frontal region. Can not hear well with the left ear. An unhealthy ulcer is found in the scalp over the left parietal protuberance. Appetite good; bowels constipated. The action of the heart is normal and the pulse is reported as 'slow and full.'"

"*Progress of the Case.*—On the morning of the 24th some difficulty of speech was observed; he answered questions slowly and imperfectly. After this date his strength rapidly declined, and he fell into a condition of stupor. On the evening of the 26th he became delirious; the report stating that the delirium is of the low muttering kind. On the following morning he appeared to be more stupid, and could not be roused sufficiently to answer questions. On the 28th he was in a profound coma, with stertor and puffing expiration. Died at 11 A. M."

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The following is my report of the autopsy:

"Slight effusion in superior sub-arachnoid space. Some soft gummatous tumors—three in number—developed from parietal layer of arachnoid, overlying the superior and lateral surface of left posterior lobe, and indenting the convolutions at this point. A similar mass, at the extremity of the right anterior lobe, also, making a depression on the brain. At the base a tumor is found springing from the left posterior clinoid process and petrous portion of temporal bone. The tumor is two inches in its long diameter and one inch in vertical depth. It directly involves the following parts: 3d, 4th, and 5th nerves of left side; left side of pons in two-thirds of its extent anteriorly, and left crus cerebri, which is pressed aside. The third nerve is much larger than its fellow of the opposite side, is reddish in color and softened. With the crus cerebri the nerve is pushed over toward the other nerve. The fourth nerve has disappeared, being embraced in the neoplasm. The fifth nerve is also included in the posterior part of the tumor, is much enlarged, softened in texture, but can be separated by careful dissection. The part of the pons impinged on is so soft as to be almost diffluent. Three bony tumors, small in size, are attached to the falx major."

Case 2.—*History.* My patient is a lady 42 years of age, married and has four children. Her temperament is nervo-lymphatic. There is a history of hereditary neuroses in her family, one ancestor having been insane. She has all her life suffered greatly with toothache. In 1862, she experienced such severe and continuous pain in the superior and inferior maxillary divisions of the fifth, that she had all of her teeth extracted. This radical measure was followed by complete relief which continued four years. In

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1866 she had irritis which was treated by Prof. E. Williams, but which was finally cured by iodide of potassium administered by Prof. James Graham. In June, 1866, pains of a very excruciating kind began in the head, especially on the left side. Nodular swellings appeared soon after, at the sites of the greatest intensity of pain, and more on the left than on the right side. The largest node was on the left side of the head extending backward from the forehead as far as the parietal protuberance.

The patient, during this year, drifted into the hands of various physicians, regular and irregular. In October, 1868, whilst being treated by a homœopathic physician she had a slight epileptiform convulsion, the loss of consciousness being but momentary. The next month, [November], she had one night a number of very violent convulsions, and did not recover consciousness for forty-eight hours.

During the first eight months of the next year [1869], she continued in the same state. The pains in the branches of the fifth pair kept up unceasingly, and the convulsions recurred at varying intervals. She became much emaciated, weighing in July of this year, only 82 pounds. The menstrual function had ceased for a year.

My observation of the case began in August of this year. The particulars already given were obtained from her daughter, a very intelligent young lady.

Condition in August, 1869, *and subsequently.* The patient presented an aspect of great suffering. She was pallid and emaciated, and had a strange and startled expression of countenance, the eyes being wide open and staring. Both pupils were dilated, and were unequal, the left being the larger. There was no strabismus. Vision was dim but not otherwise abnormal. Hearing was dull, and a continuous roaring sound was much complained of, and, finally,

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complete deafness resulted. The sense of taste was impaired but not abolished. There was no deviation of the tongue. Her appetite was poor, regurgitation of food frequent, and she was constipated usually, the constipation terminating in severe diarrhœa. Her stomach was excessively irritable, and medicines of all kinds were badly borne.

Pain was the chief symptom. She described her sufferings as agonizing. Points sensitive in a high degree were found in various parts of the scalp. Wherever the pains had existed for any length of time, extreme tenderness remained. A nodular swelling, exceedingly painful to pressure had formed on the upper left side of the forehead extending backward. Other nodes were formed at various times and they were always extremely painful, but were fugitive, appearing and disappearing whilst the larger one on the left side of the cranium continued until near the close of the treatment. The pains were of two kinds: superficial, corresponding in distribution to the ramifications of the fifth pair in the face and scalp, and deep as if located in the very center of the brain. This deep pain was heavy, tensive, and accompanied with a sense of reverbation through the cranial vault. The pains were nearly continuous. The early hours of the morning were most free from them; they came on about ten in the morning, gradually increasing in intensity towards evening; deep pains in the brain, acute lancinating pains and soreness of the scalp. The act of eating and swallowing, bodily movements, a current of air, a gentle tap on the head, the rolling of carriages and wagons in the street increased them.

It is not surprising that some evidences of impaired men-

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tal power were present. She talked slowly with a drawl, and had great difficulty in giving utterance to simple ideas. After her convulsive seizures she had hallucinations and illusions, religious frenzy, and uncontrollable excitement of a melancholic character. These attacks gradually declined, and her usual mental state was restored in some days after the convulsive seizures.

She complained of an extreme degree of vertigo. When lying in bed she had a strong sense of floating off, or swimming in the air; when walking, especially in descending steps, she had difficulty in maintaining the vertical position, and it was necessary to afford support to prevent her falling. Various motor disturbances occurred from time to time. The muscles of the face supplied by the seventh nerve were frequently agitated by spasm, and she had similar attacks in the trapezius. In the convulsive paroxysms the head was drawn to the right.

From this brief description of the symptoms I pass to the subject of treatment.

As pain was the chief symptom, I advised the hypodermic injection of morphia. In a few days I raised the amount injected each day to two grains of morphia and $\frac{1}{96}$th of atropia. Her daughter was instructed in the mode of using the hypodermic syringe, and the injections were continued for two and a half years. The good effects were these:

She was enabled to take more food.

She could retain the necessary medicines.

She was relieved of suffering.

She was directed a pint of cream daily in addition to her other food, and she took one ounce of the syrup of the hy-

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pophosphites three times a day. As she was much emaciated, and as waste was going on rapidly, it was considered desirable to supply these important foods to the organism. Subsequently she was directed a half-drachm each of the iodide and bromide of potassium twice a day, and this was kept up steadily for several months. This medicine was administered after she had come under the influence of the hypodermic injection, which enabled her to retain it without difficulty.

I may sum up in a few words the results of the treatment:

The neuralgia ceased.

The nodes disappeared.

The menstrual function was reestablished in perfect regularity.

She rose in weight from 82 to 149 pounds.

Her mind was restored. The function of hearing was not improved, and deafness remains the only sequel of the formidable lesions which must have existed.

The hypodermic injections were continued for two and a half years. A severe struggle was anticipated in the effort to discontinue them, but by very gradually diminishing the amount daily injected, they were, after six months of careful adjustment of the quantity entirely stopped without any jar to her nervous system. One year has now passed since they were discontinued and no difficulty or embarrassment of any kind has been experienced.

Commentary. There could be no doubt as to the character of these cases. In the first the *post-mortem* demonstration of the existence of gummata which implicated the parts whose functions were disordered; in the other the

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nodes, the neuralgia, and the epileptic seizures, and the results of treatment, indicate unmistakably the cause underlying the morbid phenomena. In the first case, although all the signs were characteristic, the real cause of the symptoms was unsuspected, and appropriate treatment was not instituted by the hospital physician having the case in charge.

These cases illustrate four very common lessions due to syphiloma of the brain: disorders of movement, neuralgia, paralysis of cranial nerves, epileptiform convulsions. The disorder of motility is generally composite in origin. A neoplasm of sufficient size to exert pressure on the cerebral substance will produce vertigo. In certain situations they cause direct irritation of the motor tract as in the case reported, the gummatous tumor impinged on the crus cerebri. As has been shown by Virchow, the neighborhood of the optic commissure and the peduncles of the cerebellum are favorite sites for the development of these growths. Neuralgia may be the result of direct implication of the fifth nerve, as was demonstrated in the one case and was highly probable from the symptoms in the other. According to Anstie,* sometimes the tic douloureux is due "to the extension of the mischief to the vertebral artery of the affected side, leading to interfering with the nutrition of the trigeminal nucleus in the medulla." Hughlings Jackson reports a case of this kind.† Intra-cranial tumors, however, without direct implication of the trunk of the fifth nerve, or without interference with the blood supply to its

*Neuralgia and the Diseases that resemble it. McMillan & Co., London and New York, 1871, p. 264.

†London Hospital Reports, Vol., iv., p. 318.

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nucleus, may cause violent neuralgia, by stretching of the terminal filaments of this nerve distributed to the dura mater. Anæsthesia of the fifth may be caused by syphilitic gummata destroying the trunk of the nerve. Paralysis of motor cranial nerves are very common, typical examples of which are afforded in the case above reported. Ptosis, convergent strabismus, divergent strabismus, facial paralysis, possess, as has already been stated, a high degree of diagnostic value especially when associated with headache and vertigo. Epileptiform convulsions occurring in an adult or middle aged man or woman, are significant of gummata of the hemispheres, although it is true that other adventitious products may give rise to the same symptom.

SYPHILITIC CEREBRO-SPINAL DISEASE, SIMULATING PROGRESSIVE LOCOMOTOR ATAXIA.

Case. A gentleman of this city aged about 50, of nervo-sang-lymph temperament, began to experience two years ago fugitive pains in the extremities. These came on from time to time with great suddenness and were compared by him to electric shocks. Soon after in addition to these pains, he had a deep seated feeling of heaviness in the limbs. Difficulties in micturition were next observed—slowness in the emission of urine and inability to expel the last drops. This condition was soon followed by complete retention requiring the use of the catheter. Spontaneous improvement of the bladder troubles, however, took place after a time, although slowness in the discharge of urine and difficult expulsion of the drops continued to annoy him. Obstinate constipation was coincident with the par-

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alysis of the bladder. Pain in the lumbar portion of the spine and a band-like feeling of constriction of the abdomen, accompanied the other sensations. He soon after began to experience disorders of locomotion, reeled and staggered in walking, and frequently fell prone. He, also, had dimness of vision, at times double vision, and a great deal of headache and vertigo. The pupils were large but were equal in size. He became also, exceedingly emotional, cried when he described his symptoms, and wore at all times a countenance of deep dejection.

With the progress of the case the difficulty of locomotion became very pronounced; he could scarcely stand erect at times, and always experienced great embarrassment in walking. At twilight he could not walk for fear of falling. There was impairment of cutaneous sensibility especially in the soles of the feet, which had a sensation in walking as if a cushion were interposed. The difficulty of locomotion obviously depended on two factors: impairment of cutaneous sensibility and vertigo.

The disorders of co-ordination soon extended to the upper extremities, and he experienced embarrassment in such uses of his hands as eating, tying the cravat, etc.

Commentary. The symptoms above detailed are those of progressive locomotor ataxia. This case, however, differs from genuine cases of that disorder in the short duration of the several stages, and in the order of symptoms. According to Topinard* who has written an elaborate treatise on locomotor ataxia, the duration of this disease ranges

*De L'Ataxie Locomotrice et en particulier de la Maladie appelee, Ataxie Locomotrice Progressive. Paris, J. B. Bailliere et Fils, 1864.

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from three to thirty years. All of the reported cases whose whole duration is less than one year must be assigned to other maladies. Topinard finds in the 270 cases of syphilitic disease of the nervous system collected by MM. Gros et Lancereaux, only three in which the symptoms indicate locomotor ataxia.* To this he adds one reported by Brown-Séquard.† The first case was a man aged fifty-five, who had both primary and secondary lesions. Tingling in the left foot existed for eight months. He had difficulty in movement and walked in zigzag throwing his feet outward, inward and backward. He had osteocopic pains, and finally paralysis of inferior extremities. The second case was a man forty-two years of age, who had a chancre at twenty-two. Six months after the chancre copper colored spots appeared on the body. At thirty-two, numbness, nocturnal neuralgia, and vomiting, loss of consciousness preceded by a general trembling, occurred. After these symptoms there ensued embarassment of speech, left facial hemiplegia, ptosis, diplopia, and feebleness of memory. The muscles preserved their contractile energy, but the vertical station became difficult and uncertain. In walking the gait was irregular, coordination being impaired. In Brown-Séquard's case there had been an indurated chancre. In two years followed feebleness of vision in the right eye and diplopia. He had also pains in the extremities and the head, increased at night, and numbness with incomplete anæsthesia and difficulty of locomotion.

Still more important as regards diagnosis than the irregularity in the order of the symptoms and the rapid progress,

*De L'Ataxia Locomotrice, etc., p. 49.

†The Medical Times and Gazette, 21st March, 1892.

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is the result of special treatment. Under large doses of the iodide of potassium most prompt and remarkable improvement takes place when the lesions are syphilitic. In my own case narrated above, thirty grains of the iodide of potassium given three times a day rapidly removed the very serious and alarming symptoms, and soon wrought a cure.

SYPHILITIC PARAPLEGIA.

In the cases already narrated, the syphilitic deposits were in the cranial cavity. I have now to detail a remarkable case in which the syphilitic disease affected the dorso-lumbar enlargement of the cord. In this instance, as is the rule in syphiloma of the nervous system, the symptoms occurred without reference to the order normal so to speak to paraplegia, and the duration of the several stages was exceedingly short.

Case.—Mr. W——, æt. thirty-four, by occupation a clerk. Has a sanguine-lymphatic temperament, full habit, weighing when in health two hundred and twenty-five pounds. Six years ago had a soft sore, which healed without difficulty, and was not followed as he positively assures me, by any secondary accidents. In October of last year, (1872), after riding one day on horseback, he had great stiffness and soreness of the lower limbs. In a few days he experienced numbness in the right foot and leg, and began at once to have impaired power of locomotion in this limb. He observed also that the limb diminished much in size. In two weeks the other limb began to be similarly affected, and in a month, he became unable to walk, but managed to get

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about a little on crutches. A homœpathic practioner prescribed strychnia in full medicinal doses, and as might have been expected, he grew rapidly worse under this treatment, so that in January of the present year, when I was called to see him, he was completely paralysed in both inferior extremities, and was entirely unable to move. At this time the left thigh and leg was smaller than the right, but the right had began to shrink also. There was loss of motility of all the muscles of the thighs and legs, and the muscles did not respond to a strong Faradic current. Sensibility was somewhat diminished but not lost. He had great difficulty in micturition and his bowels were obstinately constipated. He complained of pain in the lumbar spine, and of a constricting band-like feeling around the abdomen, following the line of the false ribs. Sensibility and motilty were not impaired in other parts of the body. He had no osteocopic pains. The special senses were unaffected. The power of erection and the sexual appetite were destroyed. Digestion and assimilation continued good, and he rather gained than lost in weight.

Commentary. The behavior of the case indicated syphilitic disease chiefly of the anterior columns of the cord—gummata most probably. Acting on this theory I prescribed 30 grains of the iodide of potassium three times a day and directed a hot douche to the spine. Results that appeared marvellous followed this treatment. In three days he was able to stand erect; in a week he could cross the floor of his room; in three months he was able to walk a mile or more, without apparent difficulty. No other cause of disease so completely destroying the motor function of

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the cord, would have been so affected by iodide of potassium, as syphiloma. The results, of treatment therefore, are in accord with the conclusion deduced from the clinical study.

As the symptoms began by a numbness and loss of power in the left leg, soon followed by wasting of the affected muscles, it is hardly to be doubted that the cells of the anterior horn of gray matter on that side had been invaded by syphilitic deposits or (and this is more probable), had been affected by pressure of a gummatous mass developed from the meninges. But as the effect of pressure cannot be so exactly limited as textural disease, it is not surprising that symptoms of irritation of the posterior horns of gray matter, accompanied the motor paralysis.

The case of ataxic aphasia (*ante*) affords another illustration of the protean forms by which syphiloma of the nervous centres manifests itself. In this case the symptoms were not unlike those of glosso-laryngeal paralysis, in its early stages. The prompt recovery under full doses of the iodide of potassium, demonstrates the nature of the lesion affecting the multi-polar ganglion cells of the anterior columns.

PROGRESSIVE MUSCULAR ATROPHY.

Case. J. C——, Irishman, laborer, an able-bodied and vigorous young man, was referred to me for progressive muscular atrophy, by Dr. Robert Thornton, of Newport, Ky. He knows of no instances of hereditary neuroses, nor of a case similar to his own, having occurred in his family. He first began to experience pains and tingling in the hands followed by loss of power. Wasting of the thenar

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and hypo-thenar eminences was next observed. Soon after these symptoms appeared his frends noticed that his voice had a nasal tone, and he had difficulty in swallowing.

The following points were observed by me when he presented himself:

Decided loss of power in the hands, especially in the thumbs. The thenar eminences are very markedly wasted, the skin being wrinkled and dusky. The hypo-thenar eminences also wasting, but the atrophy has not advanced so far as in the other group of muscles. The interossei are also undergoing atrophic change, and the hand is hence assuming the shape described by Duchenne de Boulogne as *la forme d'une griffe.** The affected muscles do not respond at all to the strongest induction current. The sensibility to pain and touch of the skin overlying the affected muscles is much diminished. The temperature of the thenar and hypo-thenar regions as measured by Seguin's surface thermometer is two degrees lower than parts in the neighborhood, not affected by atrophy. No fibrillary contractions of the diseased muscles are to be seen and pain is still felt in them. No other external muscles are, as yet, undergoing atrophy. The tongue is not affected. The uvula is drawn to the right, the left side of the veil of the palate hangs down without power of contraction and appears to be entirely without reflex sensibility. He complains of difficulty of swallowing, and of the escape of fluids through the nose. He has also more or less headache and giddiness, the latter being especially disagreeable to him. Vision, hearing, and taste are unaffected. The pupils are decidedly contracted.

Commentary. This is clearly a case of progressive mus-

*De L'Electrisation Localisee, Paris, 2861, p. 450.

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cular atrophy. The atrophy has commenced in the muscles usually first affected—the thenar and hypo-thenar groups. The disease will undoubtedly extend and involve other voluntary muscles, and cause death at last by failure of the respiratory muscles. The extreme degree of wasting to which the muscular system is sometimes reduced is exceedingly well shown in a lithographic plate accompanying the great work of Friedreich.* The patient in this case is reduced to the condition popularly known as "skin and bone," and being without the power of voluntary motion is represented doubled up on a chair in a most characteristically helpless attitude.

The pathology of this singular disease has been variously explained since it was first described by Cruveilhier† Meryon‡ one of the earliest investigations of its morbid anatomy, styles it "granular and fatty degeneration of the voluntary muscles," and gives four excellent drawings of microscopic preparations showing the nature of the change in the muscular system. Under the title of "progressive fatty muscular atrophy" Duchenne de Boulogne, contributed largely to our knowledge of this disease.** More credit is undoubtedly due to this indefatigable observer than to any other investigator, for the very full knowledge which we now possess on the subject. The nature of the change in the nervous system was first observed by Cruveilhier, who found an atrophic degeneration of the anterior roots of the spinal nerves. This has not, however, been always the case, and contradictory reports have been made. Lockhart Clarke†† found degeneration of the anterior columns—

*Ueber progressive Muskelatrophie, über wahre und falsche Muskelhypertrophie, von Dr. N. Friedreich, Professor der Medizin in Heidelberg. Berlin, 1873. Tafel V.

†Archives Generales de Med. 1853 p. 584.

‡Medico-Chirurgical Transactions Vol. XXXV p. 73.

**De L'Electrisation Localisee, Paris 1861, p. 437.

††British and Foreign Medico-Chirurgical Review, 1862, Vol. xxx.

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nerves and tubules—and amyloid bodies. Trousseau* questions the constancy of the relation between the changes in the anterior columns of the cord and the degeneration of the muscular tissue. A great degree of obscurity in regard to the real cause of the lesions existed until the observation of Clarke was confirmed and supplemented by the accurate and painstaking investigations of Charcot and Joffroy.† These observers found not only a degeneration of the tubules of the anterior columns and an hyperplasia of the neuroglia, but a marked atrophy of the multipolar ganglion cells of the anterior cornua. Similar changes, as is now well known, take place in the singular disease, called glosso-labio-pharyngeal paralysis, and in infantile paralysis. So closely allied are these affections, clinically and pathologically, that Charcot in a recent lecture, groups them together as "myopathies of spinal origin." A very distinctive characteristic of this group of maladies is the occurrence of atrophic changes in the paralysed muscles. Hence the present generally accepted opinion that these multipolar ganglion cells of the anterior cornua, are tropic cells. Recently the eminent professor of medicine in Heidelberg, Friedreich, has examined this whole question and published his observations in an elaborate monograph.‡ He concludes that progressive muscular atrophy is a chronic myositis, and that secondary disturbances arise in the nervous system. The local process in the muscles invades the intra-muscular nerves, giving rise to a chronic neuritis which extends along the nerve track to the spinal cord. The changes in the anterior columns and the cells of the anterior cornua, is in this view merely an extension of disease from the end organs of the nerves to the cord.

*Clinique Medicale de L'Hotel-Dieu de Baris, 1865, Tome Deux, p. 551.

†Deux Gas D'Atrophie Musculaire Progressive. Archives de Physiologie Normale et Pathologiques, Tome Deux 1869, p. 364 and p. 629.

‡Uber progressive Muskelatrophia, etc., p. 124.

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The primary lesion, according to some authorities, is in the sympathetic. The first case in which this was demonstrated was that of Schneevogt, a Dutch physician, and the most recent one, that of Dumenil. Five cases in all have been reported. In Dumenil's case there existed a sclero-fatty degeneration of the cervico-dorsal ganglia and a granulo-fatty degeneration of the lumbar ganglia of the sympathetic. In my own case the alteration in the pupil and the paretic condition of the veil of the palate, would seem to indicate a primary affection of the sympathetic. I need not enter into the supposed trophic influence of this system, which serves to explain the wasting of the muscles.*

*Die Pathologie des Sympathicus auf physiologischer Grnndlage bearbeitet von Dr. Albert Eulenburg und Dr. Paul Guttmann, Berlin, 1873.

Jaccoud—Traite de Pathologie Interne Tome 1 re., Paris, 1870.

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REPORT

ON

Therapèutics of Mineral Springs.

BY

GEO. E. WALTON, M. D.

CINCINNATI, OHIO.

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TO THE PUBLICATION COMMITTEE.

Gentlemen:

In sending you my report on "Therapeutics of Mineral Springs" which was referred to you, it may be well to say that it is a concise statement of conclusions given in my recent work on "Mineral Springs of the United States and Canada;" in some instances the same words being used.

However, in the form presented, it may be of service to many members of our association, and with this word of explanation it is herewith transmitted.

Respectfully yours,

Geo. E. Walton,

224 *Laurel Street, Cincinnati, Ohio.*

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THERAPEUTICS OF MINERAL SPRINGS.

BY

GEO. E. WALTON, M. D.

CINCINNATI, OHIO.

GENTLEMEN:

In presenting this subject before you I presume no apology is needed, as you are all probably interested, either by way of antagonism to or in sympathy with the subject treated.

The object which I propose is a consideration of the question, whether there are any virtues in mineral waters, and if there are, to point out the diseases in which they are beneficial. In so doing I shall pursue a perhaps somewhat novel course. I shall assume from the first that the waters are beneficial in disease: that they are valuable articles in the *materia medica* and worthy of consideration by every practitioner of our art. I shall separate them into different classes, and name the diseases subject to the remedial action of each class, followed by a short list of springs and waters most potent of the class and most accessible to residents of this state.

As a preliminary, however, I will read a quotation from Trousseau, that brilliant practitioner, whose death the science and the art of medicine, so deeply deplore.

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In speaking of the subject under consideration, he says:*

"Whatever may be said of them, mineral waters are not simple medicaments; whatever may be the predominant mineralizing agent as demonstrated by analysis, it acts not alone. Nature, in combining with the more or less notable elements which chemistry may isolate, other exceedingly variable ingredients and principles, which have not yet been discovered, has done for this mineralized agent that which we seek to imitate each day in our prescriptions, when we endeavor to re-enforce or diminish the effect of a medicinal substance by associating others with it. In making due allowance for the particular phenomena which may result from the action of such or such elements which enter into the composition of a mineral water. We should not attribute to a single principle, however dominant it appears in the chemical analysis, all the properties of the water, and clinical experience only can permit us to judge. This is so exceedingly true that dyspepsias allied to a grave cachectic state * * are admirably modified by very different waters. * * * By those waters in which the mineralizing principle escapes, so to speak, chemical analysis, such as the waters of Plombieres and Bagneres-de-Bigorre. * * * * Plombieres and Bagneres-de-Bigorre in the particular disease which occupies us, in virtue of an action which escapes us and which I know not how to explain, triumph over rebellious dyspepsia. Under their salutary influence the appetite revives; the constitution is re-organized. Patients affected with dropsy, with visceral engorgement, arrive at Plombieres or at Bigorre in a deplorable state, and depart, after a single season, in a condition notably ameliorated, and are often cured in a manner altogether unexpected."

What is the theory of the action of mineral waters? I will not delay to consider the subjects of change of air and

*Clinique Medicale, Paris, 1865, t. iii., pp. 58, 59.

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change of scene, potent agencies, which play an important part in the relief of many maladies, but proceed at once to say that these influences will not eradicate the gouty diathesis; will not arrest the formation of gall-stones; will not cure catarrh of the bladder, or relieve diabetes, all of which mineral waters will do.

Water is the most important inorganic constituent of the body, forming two-thirds of its substance, and in more or less intimate combination with every organ, bone, or tissue.

Chemically speaking we are only so much water in combination with varied proportions of carbon, oxygen, hydrogen, nitrogen, chloride of sodium, phosphate of lime, carbonate of lime, carbonate of soda, etc. The water thus combined may be the water of constitution, answering the same purpose in maintaining the body in form that the water of crystalization does in continuing the crystal in its integrity. But although the amount of water in the body remains about the same, it is always being replaced, a portion being discharged and a corresponding portion received.

For the ordinary purpose of quenching thirst, we imbibe waters containing but a very minute quantity of mineral ingredients; but when a patient repairs to a mineral fountain he drinks freely of water containing double, treble, quadruple, and even a hundred times the quantity and number of chemical constituents. The water thus introduced, slowly and regularly penetrates every blood-vessel, capillary, and tissue of the bodily structure, gradually replacing the water of constitution and by its different chemical affinities changing the molecular organism. I do not maintain that all of the constituents of the mineral water are retained; doubtless an almost infinitesimal quantity is incorporated each day; but in the course of weeks there is a decided and radical result—an alterative effect—manifested by increased metamorphosis of tissue, by elimination of poisonous elements, by the cure of disease.

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For convenience of the study and therapeutic application of mineral waters I have divided them into seven distinct classes, which are again sub-divided according to the predominance of what may be termed auxiliary constituents—constituents which compliment and modify the action of the principal ingredient.

CLASSIFICATION.

I. Alkaline waters,	1. Pure. 2. Acidulous, (*carbonic acid.*) 3. Muriated, (*chloride of sodium.*)
II. Saline waters, (*chloride of sodium*)	1. Pure. 2. Alkaline, 3. Iodo-Bromated.
III. Sulphur waters,	1. Alkaline. 2. Saline, (*chloride of sodium.*) 3. Calcic.
IV. Chalybeate waters,	1. Pure. 2. Alkaline. 3. Saline, (*chloride of sodium.*) 4. Calcic. 5. Aluminous.
V. Purgative waters,	1. Epsom Salt. 2. Glauber Salt. 3. Alkaline.
VI. Calcic waters,	1. Limestone. 2. Gypsum.
VII. Thermal waters,	1. Pure. 2. Alkaline. 3. Saline, (*chloride of sodium.*) 4. Sulphur. 5. Calcic.

Having thus named the different classes, I will not weary you with details concerning the sub-divisions which may be

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referred to incidentally in the treatment of each class, but will proceed immediately to a consideration of the prominent characteristics of each class and the diseases to which they are applicable.

I. ALKALINE WATERS.

These waters contain, as prominent constituents, the carbonates of soda, potassa, lithia, lime, and magnesia; the carbonate of soda being usually predominant. They also frequently contain a small proportion of chloride of sodium and sulphate of soda, and, as a rule, are largely impregnated with carbonic acid gas. The action of these waters depend on the alkaline carbonates mentioned, varied, however, by their peculiar combination with other salts and sometimes by undiscovered ingredients. These waters tend to a sedative action upon the stomach, at the same time increasing the appetite, rendering the urine alkaline, augmenting its flow, and in a slight degree promoting the activity of the skin. They especially act on the mucous membrane lessening catarrhal discharges. They prove purgative only in exceptional instances, usually producing constipation.

In what diseases do these waters especially exhibit their virtues? We will name first on the list cases of *acid dyspepsia.* In prescribing waters in this malady we should choose those rich in carbonic acid gas, this ingredient rendering the water more acceptable. In cases accompanied by anœmia, if the waters contain an active proportion of carbonate of iron so much the more will it prove remedial. Cases, however, of this disease accompanied by extreme

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flatulence and sometimes termed flatulent dyspepsia, are best treated by saline or alkaline-saline waters.

In speaking of flatulent dyspepsia Trousseau, says, "Mineral waters are here of incontestible utility; but it is no longer to Vichy, Karlsbad, or Pougues, that we should send the patient; these waters are harmful; it is Niederbronn and Forbach, of which the predominating principles are the same as those which enter into the composition of sea water, that we should recommend."

Chronic gastritis or chronic gastric catarrh, is most favorably influenced by waters of this class; those largely impregnated with carbonate of soda, or in addition containing a proportion of purging sulphates. In giving the treatment of this disease, Niemeyer, the well known author of the Text Book of Medicine, says: "The use of the waters of Karlsbad and Marienbad has the most wonderful results;" and adds "The results from this treatment are the most brilliant that are ever attained in medicine."

In diabetes mellitus—a disease probably dependent on some fault of assimulation—waters often prove of marked efficacy. Indeed, so true is this, that Althaus the well known writer on medical electricity, says, that "In some instances, diabetes has by the use of the Vichy waters, been brought to a stand still for years." And Niemeyer tells us that "In our present state of knowledge, a course of waters at Karlsbad is the measure which should deserve the chief reliance as a remedy for diabetes mellitus."

During the use of alkaline waters, the quantity of sugar excreted is remarkably diminished and all trace sometimes disappears; the inordinate thirst is also relieved, the patient improves in strength, the skin becomes active and moist

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and constipation ceases. It is true that similar results ensue when the alkaline carbonates are administered in the usual way, but the result is neither so certain or decided.

In *gall stones*, that malady for which we often consult the pharmacopœia in vain, there is no agent so certain to afford relief as properly selected mineral waters. In this connection Trosseau says "what we should do is to endeavor to regulate the functions of the bile so as to prevent the return of the colic. * * * It is in answering this indication that the waters of Pougues, Contrexville, Vichy, Karlsbad, and Vals are of such incontestable ability in the treatment of biliary gravel. * * * Under the influence of this potent medication, properly directed, the patients lose the unfortunate aptitude which they have contracted."

Niemeyer says "We do not know whether their efficacy depends solely on the formation of a thin fluid bile, by which the gall stones are readily washed downward, or whether the bile is rendered so strongly alkaline by the use of these waters as to dissolve the coloring matter and lime, or the cholesterine; but we should not delay prescribing the treatment till its mode of action can be explained."

And that distinguished author on diseases of the liver, Frerichs, bears the same testimony. Says he, "These mineral waters have certainly proved the most efficacious remedies against gall-stones. In many severe cases I have directed my patients to go to Karlsbad, and have known them to return cured. * * * I have known favorable results ensue under my own eyes from drinking the water brought from the Mill spring of Karlsbad, either cold or warm."

Finally, I may say of alkaline waters that they afford relief in *acid gravel*; that judiciously administered in *acute gout* at the middle of an interval between the paroxysms, they much lessen subsequent attacks, and by one or two seasons treatment the patient may become exempt from the disease.

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Having thus named the diseases in which alkaline waters are especially efficient, I desire to direct attention to the springs which may be used in the cases named. Unfortunately, in this class of waters our country is very deficient. There are none equalling the celebrated alkaline waters of Europe. Vichy, Fachingen, and Ems, contain respectively, twenty-nine, twenty, and eleven grains of alkaline carbonates to the pint. The purest alkaline springs in this country so far analyzed, are those of Bladon, Alabama, containing five grains of carbonate of soda to the pint. The springs of St. Louis, Michigan, contain eight grains of alkaline carbonates to the pint, but also contain eleven grains of calcic salts. The latter salts however will not interfere with the alkaline action of the water in most instances; indeed calcic waters alone often prove a good substitute for alkaline waters. Unfortunately, however, many portions of Michigan are so pervaded by miasm that a residence there is exceedingly pernicious during the autumn months.

SALINE WATERS.

It is hardly necessary to say that the chief ingredient of these waters is chloride of sodium. They promote the action of the intestines—being aperient or cathartic—augment the flow of urine, increase the secretion of the mucous membranes, and promote epithelial desquamation. They also stimulate the glandular and lymphatic systems, and increase the flow of bile. Under their use the appetite and digestion are increased. The especial value of these waters, especially those of the stronger kind, is in the treatment of scrofula. These waters are most applicable to those persons of scrofulous habit possessed of lymphatic temperament and in whom the adipose tissue is strongly developed.

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But, says Niemeyer: "We know too little about the action of these baths and about the effect which they produce upon nutrition, and the advantages derived from salt, iodine and bromine, which they contain, to enable us to determine upon theoretical principles where they are indicated and where they are unlikely to do good. * * * Hence, there is no resource but to send persons who have in vain tried cod liver oil and other anti-scrofulous remedies to Kreuznach, Ischol, Kosen, or Wittekind, or some similar watering places, in the hope that they may be among those to whom the baths will exhibit their anti-scrofulous virtues, which are by no means illusory."

In *engorged liver*, that condition which frequently obtains in persons of sedentary habits, of robust constitution, and who indulge largely in the pleasure of the table, when the condition is well marked, most decided relief is frequently given by use of the waters under consideration. Frerichs, after naming several remedies for the disease, concludes by saying we can remedy the condition "still better by regulating the intestinal secretion by the use of the springs of Kissengen, Hamburg, Marienbad, and Karlsbad." And in hyperæmia from obstructed circulation, when the condition of the patient is not threatening, he says, "we may often succeed in procuring permanent relief by the careful employment of the Ragoczy spring of Kissingen, or the Mill spring of Karlsbad."

In *chronic gout*, that condition of the gouty subject in which the attacks are accompanied by less pain and fever, but may continue for weeks or months, and several joints may be affected at the same time; in this form the saline waters are preferable to all others. It may be said, however, that they are especially useful to those of lymphatic temperament. Niemeyer thinks it probable that the favorable

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effects of these waters in this disease depends on a reduction of plethora, due to a misproportion between supply and demand, aud refers to the observations of Schmidt and Vogel, according to which the amount of albumen in the serum of the blood is inversely proportional to the amount of salt.

The value of saline waters in flatulent dyspepsia, and the testimony of Trousseau regarding their efficacy, was referred to under alkaline waters.

Saline waters of good quality are numerous in this country. The one, however, most accessible to us, and which most closely approaches the baths of Europe of this class, in constitution of water, and appliances for administration, is St. Catharines, Canada. Of the mild alkaline-saline waters suitable to dyspeptic conditions, to cases of engorged liver and chronic gout, those of Saratoga are unsurpassed.

SULPHUR WATERS.

These waters, characterized by the presence of sulphuretted hydrogen gas vary more in auxiliary constituents than either of the classes, unless it be the thermal. Some contain a large proportion of calcic salts, hence, may be termed calcic-sulphur waters, others contain considerable chloride of sodium and may be termed saline-sulphur waters, etc. For this reason these waters, as a class, have an exceedingly wide range of application, in many instances on account of the large amount of auxiliary ingredients answering the purpose of a water of the class in which the auxiliary salt is predominant.

Sulphur waters as a rule tend to increase transpiration, and augment the activity of the intestines; and, if the wa-

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ter is highly charged with sulphuretted hydrogen, agitation and sleeplessness are produced in some persons if considerable quantities of waters are imbibed. Other effects of these waters are mainly due to auxiliary constituents.

An especial value of sulphur waters is in the treatment of diseases of the skin, that form of disease sometimes termed dartrous, and exhibited in the dry scaly eruptions, psoriasis, lichen and pityriasis. The value of this class of waters in these diseases has been so long known that it is hardly necessary to quote authorities. The method of using the waters is in the form of baths, and for this purpose, thermal-sulphur waters should be chosen. Unfortunately, however, there are no waters of this kind east of the Mississippi and as a rule we must content ourselves with cold sulphur waters properly warmed so that the escape of the gas may be avoided. West of the Rocky Mountains, however, there are sulphur-thermals probably equal to any in the globe, but which have not yet been thoroughly analyzed.

The familiar disease known as *clergyman's sore throat*, that is, chronic laryngitis, is amenable to mineral water treatment. Indeed, few persons will profit more by a few weeks residence at a properly selected spring than a pastor worn by a winters work and whose vocal cords are in a state of chronic inflammation. Niemeyer after citing several hypotheses explanatory of the relief given by mineral waters in this disease, says: "Grave objections may be brought against this explanation of the action of saline waters, which is not merely paliative but in many cases absolutely curative, and we must content ourselves with the empirical fact that the springs of Ems, Obersaltzbrunnen and Selters have often alleviated or cured chronic laryngeal catarrh; the *cold sulphur** springs too * * * which we usually

*Italics not in the original.

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make use of * * * mixed with warm milk or whey." (Text book of Medicine, Am. Ed. Vol. 1. pp. 10-12). Gibb, the well known writer on diseases of the larynx, also recommends sulphur waters in this disease.

Again, in *chronic bronchitis*, sulphur waters frequently prove of great benefit. All authorities agree that sulphur waters are especially adapted to the catarrhs of lymphatic constitutions. * * * But, if the patient is not of the lymphatic type, and on the contrary is of a sanguine or irritable temperament, the calming or sedative waters associated with temperate baths are indicated. If the patient is of a decidedly scrofulous type, the saline sulphur waters should find preference.

Owing to the auxiliary salts as before stated, the subdivisions of sulphur waters are often as efficient as waters of the class in which the auxiliary salt forms the predominant constituent. Thus alkaline sulphur waters are often exceedingly efficacious in acid dyspepsia and gall stones, while saline sulphur waters prove curative in flatulent dyspepsia, and engorged liver; and calcic sulphur waters in catarrh of the bladder and gravel.

Of cold sulphur waters the list in this country is almost interminable. There are, however, none analyzed which may be classed as well marked alkaline sulphur waters. The only one which can properly be named in this connection being the Alpena well of Michigan. The saline sulphur waters, however, are well represented. The Blue Lick waters of Kentucky are of this subdivision and may readily be obtained. The artesian well of Louisville, Kentucky, and the French Lick Springs of Orange county, Indiana, also belong to the group of saline sulphur waters. Of calcic sulphur waters we may name the well known Greenbrier White Sulphur Springs of West Virginia, which, in

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addition to the lime salts, contain an active amount of purging salts. What are known as the Salt Sulphur Springs, in West Virginia, are of similar character. However, by far the most interesting sulphur waters in this country are the Red Sulphur Springs of Monroe county, West Virginia; in one pint of water they contain a little less than three grains of solid ingredients, yet are an exceedingly active remedial agent. Of the not quite three grains of ingredients of the Red Sulphur Springs, the chief one is an organic compound, named by Prof. Hayes, *sulphur compound*, analogous to Hydrosin or Barégine. There is a little over one grain of it in each pint of water. Under the use of this water in quantities of from three to four pints a day, persons affected with phthisis, and pulse ranging from 110 to 115 beats, have had the pulse fall to 70 beats per minute within seventy-two hours. The water seems also to possess a peculiar tendency towards the lungs, allaying irritation and diminishing expectoration. *In small quantities it is cathartic; in large quantities diuretic.* It is especially applicable to cases of chronic laryngitis.

CHALYBEATE WATERS.

Of these waters little more need be said than that they form a most admirable way of securing the roborant and tonic effects of iron in many cases. Says Sydenham in his Epistolary Dissertations, § 108, "The great quantity in which these waters can be taken and the extent to which they approach nature, determine them to mix with the blood more readily, and to subdue disease more effectually than any of the so called *noble* preparations of art, whatever the would be chemists may say to the contrary."

Those chalybeates should be selected as a rule which con-

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tain large quantities of carbonic acid gas, and but minute quantities of other ingredients beside the carbonate of iron.

The only especially noted *pure* chalybeate water in this country is that of Rawly, Rockingham county, Virginia.

The *alum waters* or aluminous chalybeates is a subdivision of iron waters, unequalled of the kind, beyond the limits of this country, and possessing a potency as decided as the characteristics are marked. They contain considerable iron, a large proportion of alumina, and *free* sulphuric acid. As remedies they are of exceeding value in the cure of many forms of scrofula, scrofulous ulcers, scrofulous diseases of the skin, scrofulous discharges from the ears and nose, and scrofulous diseases of the bones. They have also proved a very reliable remedy in chronic diarrhœa, except in cases attended by decided congestion of the mucous membranes and liver. The value of these waters is affirmed by such men as Prof. T. G. Thomas, of New York, Prof. M. M. Pallen, of St. Louis, and Prof. J. L. Cabell, of the University of Virginia.

The best known of this subdivision of chalybeate waters is the Rockbridge alum springs of Rockbridge county, Virginia.

PURGATIVE WATERS.

Of this class of waters I will only say that they contain a large quantity of sulphate of magnesia, or sulphate of soda, or both, in combination with calcic salts, chloride of sodium, and other ingredients in such way as to render their action much less harsh as a rule than ordinary purging salts.

The most prominent example of springs of this kind in this country is the Crab Orchard of Lincoln county, Kentucky, containing twenty-five grains of sulphate of magnesia,

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seven grains of sulphate of soda, and one grain of sulphate of potassa; in all, thirty-three grains of purging sulphates in a pint of water. The Crab Orchard salts manufactured therefrom are much milder in operation than ordinary epsom salts.

CALCIC WATERS.

The principal ingredients in these waters as the name implies are calcic salts. Of what utility in disease can a water be that contains a larger proportion of salts of lime? We answer that although their range of application is not wide it is nevertheless decided. Waters containing these salts and largely impregnated with carbonic acid gas prove of eminent utility in diseases of the urinary organs, in chronic cystitis, gravel, and calculus, whether acid or phosphatic, gastralgia, dyspepsia, and diabetes mellitus. It is to this class of waters that the Bethesda Springs of Wisconsin, and the Gettysburgh of Pennsylvania belong, which have gained a wide spread and deserved popularity in these diseases, almost entirely independent of physician's favor.

No exact investigations have been made concerning the action of these waters. As a rule they increase the excretion of urine and promote perspiration. They usually prove constipating, though when taken in large quantities they may cause purgation in some persons. On the skin and mucous membrane they seem to possess an astringent and exsiccating action which Buchheim thinks is due to a chemical combination of lime with fatty acid. Upon the urinary apparatus they seem to prove sedative in action. Probably as a result of the action of these waters on mucous membranes they prove valuable in the diseases named. Stillé tells us of lime water, that "there can be no doubt that it

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is a remedy too much neglected at the present time as a palliative for stone * * * There is some reason to believe that uric acid gravel may be dissolved and eliminated under its use." And it may be proper to refer to the observations made by Roberts in his work on Urinary and Renal Diseases, p. 251, in which he states that uric acid calculi submitted to a flowing stream of lime water at the rate of thirty pints per hour, dissolve at the rate of one and a half grains each hour.

One of the best calcic waters, besides those named, is that of Sweet Springs, Monroe county, West Virginia.

THERMAL WATERS.

We include under this term all waters possessing an unvarying temperature of 85° Farenheit or above. As a rule they contain but an exceedingly minute proportion of mineral ingredients, but in rare instances they are highly impregnated with salts. The celebrated springs of Vichy, France, are an example. Depending on the amount and kind of auxiliary constituents these waters may be divided into pure, alkaline, saline, sulphur, and calcic thermals.

In the majority of instances these waters are used only in the way of baths, and their remedial action depends on this alone. It has been questioned whether there is a difference between the heat of mineral waters and artificial heat. Formerly many held the affirmative, and there are not wanting those who still hold this view. But there are no observations showing any actual difference, and those who have investigated the matter have decided in the negative. Prof. Tyndall, than whom there is no higher living authority on heat, writes as follows: "I am not acquainted with

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any difference between natural heat and artificial heat. I am not acquainted with any thermo-electric conditions that could cause any perceptible difference between the therapeutic action of natural hot water and artificial hot water."

This being so how do we account for the cures effected at hot springs. Simply by the efficacy that results from a free aud judicious use of hot baths. By way of illustration I will describé the bath as administered at Hot Springs, Arkansas. The patient first enters a warm or hot bath where he remains for some minutes, till the capillaries of the skin are thoroughly congested. While there, he places any painful or contracted joint or neuralgic portion of the body under a spout of hot water, flowing many gallons per minute. From the warm bath he proceds to the vapor-room where he is surrounded with vapor of high temperature. During his stay in this apartment he drinks freely of hot water and perspiration pours from the integument. Then he passes to a retiring room, where he reclines on a cot well wrapped in a blanket. There he remains for fifteen or twenty minutes, most of the time perspiring freely. A bath of this kind is repeated every day or every other day for weeks. Is it surprising that under these conditions the metamorphosis of tissue proceeds with excessive rapidity; that changes are wrought in a few weeks which in the ordinary course would occupy years? The entire system is drenched with hot water; it is thoroughly washed out, and in these copious sweats uric acid, syphilitic poison and other materials of disease are expelled.

Thermal waters have been found valuable in the treatment of chronic rheumatism and gout, especially when associated with stiffening of the joints and concretions. In

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neuralgias depending on injuries or inflammations of the nerve sheaths the warm douche often proves curative. In paraplegia not depending on organic lesions of the spinal cord, douches sometimes produce beneficial results apparently by stimulation of the peripheric nerves. In cases of psoriasis, lichen, etc., these waters by direct action on the integument produce cures. Also in syphilis,—a malady which cannot be cured by mineral waters independent of other medication,—they are valuable auxiliaries seeming by the commotion caused in the system to open up the way to effective medicines which have before been of no avail.

In certain cases of caries, ulcers and old wounds the sulphur-thermals produce good results, the douches and internal use of the water causing a healthy suppurative inflammation which results in the discharge of spicula of dead bone, the unseating and bringing to the surface of imbeded balls, and the healing of fistulous track. So much reliance indeed is placed on mineral waters in these and other affections by European natives, that the military establishment of France has five hospitals at as many different springs. Austria has a like number, and Prussia sends her sick soldiers in need of mineral waters to Wiesbaden and Toplitz.

After what has been said concerning the action of thermal waters it may be considered useless to refer to resorts of this kind. I may be asked, Why not apply the hot water at home? I will answer, Because there is not an establishment in this or any land where hot water can be furnished in sufficient quantity to secure the full beneficial effects of the agent; and if there were, the expense to each individual would be equivalent to a journey and stay at a

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remote resort. Therefore I name to you the Hot Springs of Bath county, Virginia, with a temperature of 110° Farenheit, and those of Arkansas, with a temperature of 93°–150° Farenheit, as places where the full beneficial effects of hot and warm baths may be secured.

What rules are to be followed in the prescription of waters? There are none which are sure and unerring. However, it is always necessary to consider not only the class of waters to which a spring belongs but also the auxiliary constituents. In each instances the water not only possesses the action referable to the class, but in addition this action is modified by these auxiliary constituents. Hence, in designating the water suitable for a certain person we must consult his individuality and also the individuality of the spring; to inquire in the case of the patient whether the disease is dominated by a particular diathesis, such as the rheumatic, gouty, scrofulous, or dartrous; and in regard to the water, whether its constituents, both principal and auxiliary meet the indications both of the disease and the diathesis.

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Sulphate of Quinia,

BY

S. S. GRAY, M. D.,

PIQUA, OHIO.

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SULPHATE OF QUINIA,

BY

S. S. GRAY, M. D.,

PIQUA, OHIO.

In presenting a report on quinine, I shall not attempt a history, nor enter into a discussion of its use in diseases universally conceded to it by all practitioners of medicine.

In reporting cases I shall not occupy your time in giving you the minutia of each case, but give a few prominent symptoms. Following the classification of such authors as Wood, Flint, and Tanner, I shall neither discuss the treatment of these authors or that adopted by the profession generally, but give facts as observed by myself and some of my medical friends.

Quinine will more certainly interrupt the recurring paroxysms of an intermittent, if given in large doses at long intervals with less of the unpleasant effects of "*tinitus aurium*" than if given in short intervals and small doses. If twenty grains be required to interrupt a paroxysm of tertian intermittent, given in one or two grain doses during the intermission, eighteen grains will be sufficient, if given in six grain doses every six hours, the last dose given one

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hour before the time for the return of the paroxysm and twelve grains will be sufficient if taken at a single dose two hours before the paroxysm. Assisted by a warm foot-bath, warm drinks, and the patient kept in a warm bed, I have interrupted the paroxysm by a single fifteen grain dose, given thirty minutes before the time of its return. Dr. N. Walkly's favorite prescription is "Quinine grains, 20, Tannin grains, 5," to be taken at a single dose two hours before the expected paroxysm. After these full doses there is much less liability of a relapse.

In debility, especially in delicate females with deficient circulation, cold extremities, depressed spirits, complicated with disordered uterine functions, a single four grain dose of quinine once in twenty-four hours is of great benefit, producing a warmth of extremities and elevation of spirits that I have failed to obtain by any other remedy. As a patient once described the effect to me, "the heat comes and drives the *cold* and *gloom* away."

Dr. S. S. Boyde in a paper read before the Wayne county Medical Society, of Indiana, recommends its use in acute diarrhœa, phthisis pulmonalis, pneumonia, rheumatism, diptheria, dropsy, and cerebro-spinal miningitis.

But the especial object of this paper is to call attention to its use in diseases of the lungs. Dr. B. F. Kitchen reports to me the following result of its use in asthma: Mrs. G——, who had been subject to frequent attacks, on June 11, 1871. was violently taken ill. When I arrived I found her unable to lie down, and in great distress, with all the symptoms of a severe attack of asthma. I gave five grains of quinine, repeated every four hours during the day, which gave her a comfortable rest the first night and no return of asthma until the Spring of 1873, when she had another attack as before. Gave the same treatment with the same

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result, and she has had no return of the disease since. I have used it in two other cases of the same disease with good result. I am ready to believe that I can do more with quinine in asthma than with any other remedy that I have tried.

In the family of Mr. D——, there existed a strong predisposition to croup, and in a family of four children there were frequent attacks, which had been successfully treated in the usual way by compound syrup of squill, ipecac, lobelia, calomel, &c., at least none of them had died although they had done a fearful amount of vomiting. Three years ago a fine little boy of three summers was attacked with croup which had resisted the usual routine of treatment for forty-eight hours, receiving only temporary relief from the emesis. At three o'clock, P. M., the symptoms slowly but certainly became more alarming. Being discouraged as to hope of success from the course of treatment, I felt, unless relief was obtained, he must soon fall a victim to this dreadful disease. I gave a one grain sugar coated quinine pill, in one hour the symptoms were less alarming; repeated the dose and left my patient, ordering one pill every three hours, and if the violent symptoms returned to give the compound syrup of squill. To my great satisfaction nothing was required but the quinine, and the patient had a good night's rest and made a rapid recovery. Since that case they always keep a box of pills, and have treated all subsequent attacks successfully. I have used quinine in more than twenty cases and am entirely satisfied as to its beneficial effects in croup.

The following interesting case is reported to me by a medical friend: "A daughter of Mr. P——, four years old, was violently taken with membranous croup. After forty-eight hours of the ordinary treatment, carried to passing the finger into the throat to produce vomiting and clear the

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throat of mucus and membranes. Without hope of success from that course of treatment I gave three grains of quinine every two hours. Twelve hours after first dose the membranes began to be expelled and the child spat them out like shavings of leather; they were spread on paper and examined as to their character. I am strongly impressed with the belief that without quinine the child must have died."

Mrs. G——, age seventy-nine, was attacked most violently with pneumonia January 1, 1872. Saw her eighteen hours after first symptoms. Distressing and persistent cough; pain in both lungs; difficult respiration; chilliness amounting almost to coldness; anxious expression of countenance; congested eyes, with dark and leadened color of face. All symptoms indicated impending dissolution. Ordered three two-grain quinine pills to be given every three hours, fifteen grains calomel, warm foot-bath, warm drinks, and patient to be kept in a warm bed. Great relief from the first dose, and by the time eighteen grains were taken she was expectorating freely a plum colored sputa, pulse soft and full, skin moist, breathing free and easy, chilliness all gone and resting comfortably. A few smaller doses of quinine almost entirely relieved all the symptoms of pneumonia on the third day, and notwithstanding her age and the violence of the attack made a good recovery. In January, 1873, she had a second attack. Followed the same general treatment with like favorable results.

Mr. S——, cotton batting manufacturer, aged fifty, had a violent attack of pneumonia in February, 1868. I saw him twelve hours after the symptoms appeared. Ordered ten grains of quinine every six hours, with warm drinks, foot-baths and a mercurial cathartic. After the second dose of quinine, he began to perspire freely, and in twenty-four

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hours was entirely relieved. He resumed work in three days.

Mr. E——, teamster, age thirty-two, was exposed all day in cold wind and rain. Saw him three hours after first violent symptoms. Said he had been suffering from a bad cold for three days; quick pulse, chilliness, difficult breathing, cough, pain in lungs. Had pneumonia four years before; at that time was three weeks in recovering. Ordered fifteen grains of quinine every six hours, warm drinks, foot bath, and a mercurial cathartic. After second dose almost entire relief with profuse perspiration. Awoke in the night, thought water had been spilled in his bed; had a comfortable night's rest. Four doses relieved him entirely. Resumed his work on third day.

Miss R——, aged eighteen, was taken with all the symptoms of pneumonia, and with violent pain in head. Ordered quinine, grains, 8, pure camphor, grains, 3, to be given every six hours. Pain in head relieved after first dose. Entire recovery on fourth day.

In the practice of a neighboring physician the following case occurred: A child nine months old was violently attacked with pneumonia. In the inflammatory stage I was called in as consulting physician. Ordered 1 grain of quinine every three hours, alternated with veratrum viride. First dose gave great relief. Child made a good recovery.

The same physician reports to me the case of a young man, to whom ten grains of quinine were given by accident in a highly inflamed condition of the lungs, every four hours until three doses were given without any injurious effect. The patient was greatly benefitted and from that time convalesced rapidly.

If it was not for extending this paper beyond the prescribed limits, I should present some cases of its effects in

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phthisis pumonalis. But I forbear. The foregoing facts I think justify the following

CONCLUSION:

1. That the effect of quinine may be very much assisted by the use of warm drinks, warm foot baths, and keeping our patient in a warm bed.

2. That the beneficial effects of quinine are more certainly obtained by large doses, at long intervals, than by small doses at short intervals.

3. That it is strongly indicated in cases of debility, and most cases of delicate females.

4. That it is not contra-indicated in many cases of pain in the head, but often relieves.

5. That in croup we may expect great benefit, and it will often supercede the necessity of any other treatment.

6. That we may give it in the first stages of pneumonia with as much hope of success as in ordinary intermittents.

7. That it may be given in the inflammatory stage of pneumonia if combined with varatrum viride with benefit.

I shall not attempt to account for the modus operandi of its action, but content myself by giving an extract from an address delivered by Dr. Roberts Barthalow, of the Medical College of Ohio last October, as giving probably the most satisfactory solution by what he terms physiological antagonisms:

"Similar antagonisms exist in the actions of strychnia and chloral, of opium and belladonna, of atropia and muscaria, and some others. The most important of these is the

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mutual counterbalancing action between opium and belladonna. The existence of these antagonisms is one of the most hopeful indications for the future of therapeutics. There is much reason for believing that the 'power of counteracting disease is far from unattainable; and it supplies a strong incentive to efforts designed to determine the conditions of disease and the action of remedies with an exactitude sufficient to show how the remedial action may be applied as a counteracting influence to the diseased condition.'

That this expectation is not an impossible dream is evident from the recent discoveries as to the action of quinine. Everybody is familiar with this agent as respects its utility in a certain class of maladies; but few are aware of the wonderful success which has attended a study in animals of its physiological actions. These very important researches I now propose to illustrate as far as can be done here, and I ask your closest attention to the subject.

It has been shown by Prof. Binz, of Bonn, that quinine has the wonderful property to prevent the multiplication of the white corpuscles—the bioplasm or protoplasm—of the blood, and to arrest their amœbiform movements. It was first shown by Waller, and since by Cohnheim, that a very important part of the process of inflamation consists in the migration of the white corpuscles from the vessels into the surrounding textures. Any agent which prevents this migration must hence be very important to the treatment of inflammations. Further, Binz has shown that quinine is exceedingly destructive to the lower forms of life as vibrio, bacteria, &c. Whilst it possesses these remarkable powers, it is itself free from any decidedly injurious influence on the healthy tissues of the body. So far from causing

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any injury to the textures, it has been shown by Bence Jones, that there is contained in animal substance a principle to which he has applied the term animal chinordine, on account of its close resemblance chemically and physically to quinine.

There are other powerful chemicals, it is true, which would prevent the multiplication and migration of the white corpuscles of the blood and that would be destructive of the lower forms of life; but their use in sufficient quantity would entail such damage to the tissues that they can not be employed for this purpose. But I hasten to the demonstiation of the action of quinine. Here I must claim your indulgence while I bring before you some recent investigations regarding the toxic activity of certain animal fluids. Pus or matter is a comparatively harmless fluid. When thrown into the abdominal cavity of a rabbit or other animal, it excites little irritation and does not destroy life. If, however—as has lately been shown by Burdon Sanderson, and as I have myself ascertained by repeating his experiments—the matter from the abdominal cavity be introduced into another animal, it is found to possess extraordinary activity and to destroy life in a short time. This increased activity appears to be due to the development in the fluid of the abdominal cavity of the second animal of an immense number of vibrio having a peculiar shape. Now if quinine be mixed with this poisonous pus, its toxic activity is destroyed and it may be injected with impunity into other animals. In this vial is a quantity of this deadly pus, obtained in a mode I have described, from a rabbit killed by injecting into its abdominal cavity, ordinary pus. If I now inject this poisonous matter into the

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abdomen of this healthy rabbit, it will set up a systemic infection and in a few hours the rabbit will die. If, before injecting, I mix the pus with some solution of quinine, it will be deprived of all toxic power, and the animal will hardly be incommoded.

This theoretical demonstration illustrates numerous prac tical applications which have long been made, and opens to us a range of utility of similar remedies vastly beyond our present experiences."

It is a well established fact that in inflammation the white corpuscles of the blood are not only increased in number, but their movements are accelerated.

Now, if it is established that quinine prevents the multiplication of white corpuscles and arrests their movements, does it not open up a new field in the treatment of inflammatory diseases?

Again, Dr. C. F. Radenstine, in a paper read before the Yonker's Medical Society and published in the New York Medical Journal, expresses the opinion that tubercles have their origin in an extravasation of white corpuscles of the blood, and in every anatomical feature they are identical.

Now, if there exists such an intimate relationship between white blood corpuscles and tubercular corpuscles, and quinine has such a controling influence on white corpuscles of the blood, may we not expect a corresponding influence over tubercular corpuscles, and does it not throw a ray of light over the treatment of tubercular diseases.

"I do not believe that the consumptive will find a cundurango-tree any more than the cancerous patient. But I know that science is progressive, and that the limits of our art have not been reached. Nature may have no specifics; but the tree of medical knowledge of good and evil will still blossom and bear golden and abundant fruit for the healing of the nations."

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LIST OF MEMBERS

OF THE

Ohio State Medical Society,

WITH

Post-office address, date of admission, and date of death.

NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Adams, D. P	Columbus	1873	
Ackley, H. A.*	Cleveland	1850	
Allen Peter.*	Kinsman	1850	
Agard, Aurelius H	Sandusky	1853	
Amos, C. E*	Cleveland	1852	
Andrus, A	Westerville	1872	
Angel, E.*	Akron	1852	
Applegate, Fred C	Windham	1859	
Almy, S. C	Cincinnati	1862	
Armstrong, T. H	Pawhatan Point	1862	
Allen, D. B	West Liberty	1865	
Anderson, W. S	Newtonville	1867	
Aiken, P. J	Newark	1869	
Alcorn, A. W	Ravenna	1870	
Allen, Dudley	Oberlin	1870	
Arnold, Emil	Ironton	1872	
Bailey, J. S	Freeport	1873	
Brown, J. E	McConnellsville	1873	
Bishop, J. C	Middleport	1873	
Buckingham, E. V. B	Centerton	1873	
Ball, A	Zanesville	1848	
Baker, Timothy	Wooster	1851	
Baker, A. H.*	Cincinnati	1846	1865

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Beach, C. H.	Wellington	1868	
Belding, Alvin.	Ravenna	1853	
Bell, E. R.	Ripley	1871	
Beagrand, Pierce.	Freemont	1853	
Bigelow, J. M.	Lancaster	1846	
Boerstler, G. W.*.	Lancaster	1846	1871
Boalse, A. N.*.	Lockburn	1848	
Boyle, C. E.*.	Columbus	1851	1870
Bonner, Stephen	Cincinnati	1847	
Brown, E. T.*.	Logan	1849	
Bricker, W. R.	Shelby	1848	
Bronson, James.	Newton Falls	1852	
Buckner, Philip J.*.	Cincinnati	1850	
Butterfield, John*.	Columbus	1846	1847
Bing, J. P.	Pomeroy	1851	
Brown, A. M.	Cincinnati	1851	
Brinkerhoof, D. H.	Willoughby	1853	
Buckner, Wm.*.	Hamilton	1853	
Burr, J. N.	Mount Vernon.	1853	
Brooks, J. H.	Brownsville	1854	
Brennan, Thomas*.	Dayton	1855	1858
Bell, A. E.	Zanesville	1855	
Buckingham, E. M.	Springfield	1855	
Brown, B. S.	Bellefontaine	1855	
Brellen, Joseph.	Grove City	1856	
Boyd, G. M.	Xenia	1857	
Battles, W. S....	Shreve	1858	
Brook, George W.	Ellsworth	1858	
Bertolett, D. H.	Letonia.	1858	
Baker, Norman.	Lucas	1858	
Bridge, W. W.*.	Marion	1859	1864
Brayton, A.	Cary	1859	
Beach, J. N.	West Jefferson	1859	
Brenton, J. L.	North Georgetown.	1860	
Blizzard, S. R.	Huntsville.	1860	
Blackman, G. C.*.	Cincinnati.	1860	1871
Brooks, M. L.	Cleveland	1861	
Bowers, E. D.	Columbus	1861	
Beverly, P. F.	Jerome.	1862	
Beach, A. J.	Belleville.	1863	
Brown, J. C.	Urbana	1863	
Buckner, J. H.	Cincinnati	1863	

*Deceased

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Bunce, Wm.	Oberlin	1864	
Ballinger, Wm. J.	Pleasant Valley	1864	
Brown, Wm. A.	McConnellsville	1865	
Baggs, James	Ontario	1866	
Black, J. R.	Newark	1867	
Besse, H.	Delaware	1868	
Berlin, C.	Wapakoneta	1868	
Blymer, A.	Delaware	1868	
Blesch, P. E.	Columbus	1869	
Bartholow, Roberts	Cincinnati	1869	
Bennet, John	Cleveland	1869	
Beardsley, C. E.	Ottawa	1869	
Bertolett, W. J.	Shreve	1869	
Brown, J. A.	Degraf	1860	
Bracken, W. C.	Jersey	1869	
Butler, G. W.	Alton	186	
Brainard, A. C.	Orangeville	1870	
Bruce, A. G.	Clarksfield	1870	
Bramble, D. D.	Cincinnati	1870	
Boerstler, G. W., Jr.	Lancaster	1870	
Bryson, C. C.		1871	
Bertolett, J. B.	Letonia	1870	
Bertolett, H. A.	Washingtonville	1870	
Butler, George O.	Cleveland	1870	
Ballard, H. D.	Findlay	1870	
Brainard, H. C.	Cleveland	1870	
Bennett, P. C.	Freedom	1870	
Bishop, S. P.	Delta	1870	
Bigney, P. M.	Cincinnati	1871	
Bishop, L. W.	Maineville	1871	
Bryant, W. G.	Springfield	1871	
Chisholm, J. W.	Mt. Perry	1873	
Cary, Abel*	Salem	1852	1872
Crume, P. M.*	Eaton	1847	1869
Conklin, H. S.	Sidney	1849	
Cook, F.*	Atwater	1853	1857
Chamberlin, E. K.*	Cincinnati	1847	1847
Cotton, J. D.	Marietta	1852	
Conner, P. S.*	Cincinnati	1853	
Coons, Israel A.	Middletown	1853	
Cox, D. A.*	New Paris	1846	
Crook, James M.*	Dayton	1853	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Carroll, Thomas*.	Cincinnati	1854	1871
Culbertson, Howard	Zanesville	1855	
Campbell, John	Uniontown	1855	
Caldwell, Joseph*	Huron	1857	1866
Cushing, H. K.	Cleveland	1857	
Caruthers, John A.	Kilbourne	1859	
Cadwallader, Rowland	Findlay	1862	
Cook, Charles C.*	Youngstown	1862	1863
Clark, Henry P.	Ashland	1862	
Cutler, James	Bellepoint	1864	
Combs, J. S.	Owensville	1865	
Comegys, C. G.	Cincinnati	1871	
Clason, Thomas S.	Bellefontaine	1865	
Carter J. O.	Marion	1866	
Corson, John	Middletown, Butler Co.	1866	
Constant, W. S.	Delaware	1866	
Coleman, Horace	Troy	1867	
Chessney, W. M.	Kenton	1867	
Courtwright, G. S.	Lithopolis	1867	
Conner, P. S.	Cincinnati	1868	
Conklin, W. J.	Dayton	1868	
Clark, John H.	Mechanicsburg	1869	
Chase, B. S.	Akron	1870	
Cassat, M.	Cincinnati	1870	
Cutler, E. J.	Cleveland	1870	
Carson, Wm.	Cincinnati	1871	
Cottle, L. A.	Maineville	1871	
Campbell, W. H.	Concord, Ky	1871	
Carmichael, W. A.	Loveland	1871	
Courtwright, A. P.	Cincinnati	1871	
Coble, D. W.	Westerville	1872	
Coleman, David.	West Union	1872	
Carrick, A. L.	Cincinnati	1871	
Cotton, D. B.	Portsmouth	1872	
Dunham, J. M.	Columbus	1873	
Dew, J. S.	Trimble	1873	
Danna, M.*		1849	
Delemater, John.	Cleveland	1850	1867
Dorsey, G. V.	Piqua	1850	
Denig, R. M.	Columbus	1851	
Dolman, Wm*	Cleveland	1852	
Dawson, W. W.	Cincinnati	1853	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Davis, John	Dayton	1853	
Dawson, John*	Columbus	1851	1866
Davis, John	Cincinnati	1854	
Donohoe, H. J.	Sandusky	1854	
Dunlap, Alexander	Springfield	1854	
Dodge, I. S*	Cincinnati	1854	1872
Dean, W. F.*	Milan	1857	In army.
Dandridge, A. S.	Cincinnati		
Darwin, Henry W.	Gettysburg	1859	
Drake, J. L.	Lebanon	1859	
Drury, Wm. H.	Columbus	1859	
Dalton, N.	Logan	1860	
Davis, Wm. B.	Cincinnati	1865	
Dillon, Horace, D.	Warren	1866	
Dunlap, A. S.	Springfield	1868	
Doherty, G. A.	Cincinnati	1868	
Dunlap, C. W.	Springfield	1869	
Dalby, Isaac N	Cleveland	1870	
Day, E. A.		1871	
Dandridge, N. P.	Cincinnati	1871	
Davis, T. D.	Dayton	1872	
Edwards, Tom. O., Jr.	Lancaster	1873	
Ells, G. E.*	Lithopolis	1849	1867
Estep, William	Lloydsville	1852	
Edwards, J. D.	Xenia	1867	
Ellis, A. N.	Lockland	1868	
Eckman, Hiram	Tuscarawas	1869	
Everhard, N. S.	Wadsworth	1870	
Ebright, L. S.	Middlebury	1870	
Erwin, R. W.	Athens	1872	
Frankenberg, O.	Columbus	1873	
Farrell, T. J.	Columbus	1873	
Fisher, P. Q.	Nashport	1873	
Fowler, S. W.	Delaware	1873	
Foulke, L. W.	Chillicothe	1850	
Fyffe, E. P.*	Urbana	1851	1867
Firestone, L.	Wooster	1852	
Fuller, S. W.	West Liberty	1853	
Foote, H. E.*	Cincinnati	1854	1871
Falconer, Cyrus	Hamilton	1854	
Foster, Nathaniel	Cincinnati	1854	
Farrington, S. H.	Ashtabula	1856	

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Finch, S. F.	Green Springs	1857	
Fries, George*	Cincinnati	1862	1866
Follett, Alfred	Granville		
Fuller, A. B.	Loudonville	1868	
Finch, C. M.	Portsmouth	1869	
Firestone, J. I.	Salem	1870	
Frizzell, W. A.	Buena Vista	1872	
Forbes, S. F.	Toledo	1856	
Green, J. W.	Fairfield	1853	
Gilliam, D. L.	Nelsonville	1873	
Gardner, G. W	Harrisburg	1873	
Gay, N.	Columbus	1848	
Gard, B. F.*	Columbus	1847	1849
Gillett, Bartley	Springfield	1849	
Gaston, E.*	Morristown	1849	1868
Gordon, T. W	Georgetown	1849	
Goble, P.	Worthington	1849	
Gailey, J. D.*	Marion	1851	
Gille, L. C. C.*	Westville	1853	
Gerwe, F. A. J.	Cincinnati	1854	
Gabriel, R. W.*	Dublin	1854	1860
Gotwald, A. G.	Dayton	1854	
Green, M.*	Cambridge	1855	1856
Gilchrist, R. S.	Degraff	1856	
Gabriel, J. F.	Piqua	1856	
Gundry, Richard	Athens	1856	
Guerin, Z. F.	Columbus	1856	
Galpin, Loman	Milan	1857	
Gans, S.*	Cincinnati	1861	1864
Gonsaulis, C	Sparta	1863	
Griswold, Wayne	Circleville	1866	
Gray, S. S.	Piqua	1867	
Goldrick, William	Delaware	1868	
Guyttard, F.	New Bedford	1870	
Gawne, A. J.	Cleveland	1870	
Guthrie, James W.	Wooster	1870	
Gould, D. T.	Cleveland	1870	
Gibson, Richard McD.	Seneca County	1871	
Green, J H.	Troy	1871	
Holston, J. G. F., Jr.	Zanesville	1873	
Hill, G. W	Ashland	1873	
Hoover, T. C.	Bellevue	1873	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Hughes, E. E.	Thurman	1873	
Helmick, S. C.	Baltimore	1873	
Hills, R.	Delaware	1846	
Howard, R. L.*	Columbus	1846	
Helmick, J	Harrisburg	1849	
Hornbeck, L.*	New Carlisle	1849	1865
Hurxthall, F. T.*	Massillon	1849	
Huestis, Isaac	Chesterhill	1849	
Harley, L. G.	Dalton	1853	
Henderson, J. P.	Newville	1850	
Hamilton, J. W.	Columbus	1849	
Howard, E. W	Akron	1852	
Hopkins, Rudd C.*	Newburg	1852	In army.
Hildreth, C. C.	Zanesville	1853	
Helmick, G. W.*	Harrisburg	1848	
Hoagland, C. N.	Troy	1853	
Holston, J. G. F.	Zanesville	1850	
Haines, Job*	Dayton	1853	1860
Hart, B. F.	Marietta	1854	
Haines, V.*	Cambridge	1853	1865
Henderson, D. W.	Marysville	1856	
Hubbard, J. C.	Ashtabula	1856	
Harmon, Julian	Warren	1857	
Hitchcock, James	Port Clinton	1857	
Hughes, J. W.*	Berlin Center	1858	1869
Hall, W. E.	Fayetteville	1859	
Houston, J. T.	Jamestown	1859	
Hill, E. L.	Oxford	1857	
Hall, W. C.*	Fayetteville	1859	
Haggott, J. P.*	Eaton	1861	1862
Hays, William	Melfordton	1862	
Hyatt, E. H.	Delaware	1862	
Hamil, J. J.	Newark	1863	
Henderson, R. A.	Upper Sandusky	1865	
Herrick, H. J.	Cleveland	1865	
Hadley, Edwin	Richmond	1865	
Hill, N. S.	Newville	1866	
Hunt, Charles	Wooster	1866	
Hopkins, D. O.	St. Paris	1866	
Hazzard, J. S. R.	Springfield	1867	
Hill, H.	West Alexandria	1867	
Hendrickson, Hugh	Lewis Center	1868	

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Hunt, A. H.	Blackleyville	1868	
Harrison, Eugene	Napoleon	1869	
Higgins, C. W.	Big Plain	1869	
Halderman, D.	Columbus	1869	
Hough, J. B.	Ridgeville	1869	
Heuston, R. C.	Oxford	1868	
Heighway, A. E.	Cincinnati	1870	
Hurd, A	Findlay	1870	
Houghton, J. W.	Wellington	1870	
Hobson, J. F.	Newburg	1870	
Hadlock, J. W.	Cincinnati	1871	
Herrick, L. C.	Woodstock	1871	
Hall, N.	Cumminsville	1871	
Hyde, William	Fulton county	1871	
Hall, J. M.	Fayetteville	1871	
Hoff, J. W.	Pomeroy	1872	
Holdt, George	Cincinnati	1871	
Huggins, R. D.	West Alexandria	1871	
Hall, C. B.	Millersport	1872	
Hall, Camillus.	Burlington	1872	
Isham, A. B.	Walnut Hills, Cin'ti	1872	
Jacoby, F.	Columbus	1873	
Judkins, J P.*	Cincinnati	1846	1867
Johnson, William*	Delaware	1850	
Judkins, William*	Cincinnati	1847	1861
Jones, T. W.	South Bloomfield	1847	
Junkens, M. W.	Bellair	1859	
Joseph, A. P.	Fairmount	1862	
Jones, R. E.	Gomer	1863	
Johnson, R. A.	Wellsville	1864	
Jacobs, W. C.	Akron	1866	
Jenner, A E	Crestline	1866	
Jennings, E.	Dayton	1867	
Jones, A. B.	Portsmouth	1868	
Jones, W. H.	Cleveland	1868	
Jones, L. M.	West Liberty	1869	
Jewett, W. H.	Hilliard	1869	
Jennings, J. D	Sonora	1869	
Jobes, J. A.	Palestine	1870	
Jewett, M.	Middleburg	1870	
Jones, W. W.	Toledo	1856	
Jones, J. D.	Newburg	1870	

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Jones, N. M.	Cleveland	1870	
Jewett, H S	Dayton	1871	
Kirtland, J. P.	Cleveland	1846	
Kable, W. R.*	Bellebrook	1846	1859
Kreider, M. Z.*	Lancaster	1846	
Keever, M H.	Ridgeville	1850	
Kay, Isaac	Springfield	1853	
Kincaid, W. P	New Richmond	1854	
Kennedy, J. C.	Batavia	1854	
Keyt, A. T.	Walnut Hills, Cin'ti	1850	
Kyle, J. G.*	Xenia	1856	1870
Kennedy, J. L*	Batavia	1864	1866
Kinsman, D. W.	Circleville	1864	
Kelley, H. R.	Galion	1868	
Kemp, J. D.	Dayton	1868	
Knowlton, A. P.	Olmstead Falls	1870	
Kinnaman, J. W.	Ashland	1870	
Kirby, Jacob	Hillsboro	1871	
Kitchen, B. F.	Clay Post Office	1872	
Kearney, T. W.	Cincinnati	1870	
Lewis, D.	New Haven	1848	
Landon, C. P.	Westerville		
Lyman, C. N	Wadsworth	1852	
Lamme, W. H.	Xenia	1853	
Lane, E. S.	Sandusky	1853	
Lathrop, H.*	Columbus	1846	1849
Lawson, L. M*	Cincinnati	1853	1864
Leonard, B. B.	West Liberty	1854	
Loving, S.	Columbus	1858	
Longfellow, A. J.	Fostoria	1861	
Loller, W. B.	Nashville	1864	
Leonhard, C. S.	Ravenna	1865	
Longworth, W. N.	Van Wert	1866	
Little, J. A.	Delaware	1868	
Lord, J. M.	Chesterville	1868	
Lewis, W. C.	Rushville	1869	
Lee, E. B.	Garrettsville	1870	
Lewis, Edward C.	Canal Dover	1870	
Luddington, H.	Cincinnati	1871	
Larimore, F. C.	Mount Vernon	1871	
Lang, E. R.	Portsmouth	1871	
Ludlow, J.	Cincinnati	1871	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Logan, W. M.	Cincinnati	1871	
Minor, T. C.	Cincinnati	1873	
Morgan, J. B. F.	Clarksburg	1873	
Morris, Jonathan.	Ironton	1873	
Maris, G. W.	Columbus.	1848	
Mitchell, G. F.*	Mansfield	1850	1869
Mussey, R. D.*	Cincinnati	1847	1866
Murphy, J. A.	Cincinnati	1872	
Moore, W. C	Wooster	1852	
Millikin, Samuel*	Hamilton.	1853	
Metz, Abram	Massillon	1852	
Moore, Jonas*	Marietta.	1852	1856
Merriman, A.*	Madison.	1853	1867
Mack, John	Shelby	1853	
Martin, Joshua*	Xenia	1853	1857
Mosgrove, J. M.	Urbana.	1853	
Mount, William*	Cumminsville	1853	1866
Muscroft, C. S.	Cincinnati	1854	
Marshall, N. T*	Cincinnati	1854	
Mendenhall, G.	Cincinnati	1854	
Mussey, W. H.	Cincinnati	1854	
Morehead, W.*	Zanesville.	1855	1861
Mullen, T. J.	New Richmond	1855	
Matson, A F.*	Logansville	1857	1867
Miller, A. C.	Orrville	1858	
Mahlman, C. H. W.	Columbus.	1859	
Mounts, J. L.	Morrow	1860	
Moe, L. W.	Ottawa	1860	
Maranda, Isaac	New Carlisle	1860	
Matchett, W. H.	Greenville	1862	
Maynard, A.	Cleveland	1863	
Mitchell, M*	Mansfield	1863	1864
Morse, Joel	Cleveland	1863	
Moore, William	New Lisbon.	1865	
Mitchell, George	Mansfield	1868	
Moore, Eugene L.	Moscow	1868	
Morse, D. A.	X. Roads	1868	
Moore, E.	Warren	1868	
Miles, A. J.	Cincinnati	1869	
Morris, F. B.	Ross	1869	
Moore, A. C.	Amelia	1869	
Mahlman, H. A.	Columbus.	1869	

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Miller, Thomas V.	Columbus.	1869.	
Metcalf, C. T.	Warren	1870.	
Miller, T. C.	Cleveland	1870.	
Miller, C. A.	Orrville	1871.	
Mouser, J. A.	La Rue	1870.	
Murray, L. S.	Medina	1850.	
Morgan, E. D. S.	Berlin	1872.	
Moor, James.	Ironton	1872.	
Monahan, A. B.	Jackson	1872.	
Mendenhall, J. W.	Marathon	1871.	
McDowel, W. J.	Portsmouth	1872.	
McKenna, L. F.	Junction City	1873.	
McCollough, A. M. F.	Bealsville	1873.	
McGuire, W. B.*	Waynesville	1848.	
McLean, R. R.	Lockbourne	1861.	
McLaughlin, A. C.	Tremont	1852.	
McFarland, J. A.	Tiffin	1850.	
McNally, Thomas	Chillicothe	1853.	
McNeal, F. D.*	Canal Dover	1854.	
McIlvaine, R. R.	Cincinnati	1854.	
McMeans, R. R*	Sandusky	1854.	1862
McDermont, C.	Dayton	1857.	
McBeth, J. C.	Galion.	1858.	
McCarty, Oliver.	Polk Post Office	1862.	
McBride, Alexander	Berea	1865.	
McConnel, C. N.	Upper Sandusky	1865.	
McElwe, S	New Castle.	1866.	
McEbright, Thomas G.	Akron	1866.	
McKinley, C. G.	Sunbury	1866.	
McClure, James.	Lee.	1866.	
McClurg, John.	Center Village.	1867.	
McNeal, F. B.	Troy	1867.	
McNeely, J. S.	Dalton	1867.	1868
McCracken, W. A.*	Springfield	1867.	
McCuskey, H.	Batavia	1868.	
McCallough, J. G.	Bealsville	1868.	
McLaughlin, R.	Butler	1869.	
McGraw, Aaron.	Ford	1869.	
McCardy, John.	Youngstown.	1870.	
McKean, William	Mount Hope	1870.	
McGuire, J.	Norwalk.	1870.	
McCullom, E. J.	Seneca County	1871.	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Norman, Frank	Columbus	1873	
Nourse, J. D	Reynoldsburg	1873	
Naw, J. H	Carroll	1873	
Norton, J. C.*	Marion	1848	
Nicholson, W. A	Cleveland	1853	
Noble, David	Hillsboro	1860	
Neal, T. L	Dayton	1863	
Neil, Alexander	Columbus	1868	
Noble, C. D	Oberlin	1870	
Oliver, J. Q.*	Cincinnati	1854	
Owen, H. W	Mount Vernon	1862	
Orr, G. B	Cincinnati	1871	
Owsley, J. B	Jacksonburg	1871	
Pixley, S. M	Portsmouth	1873	
Potter, J. B	Canal Winchester	1847	
Pollock, Calvin	Donnelsville	1873	
Putnam, J		1873	
Price, Joseph	Randolph	1852	
Purple, J. G.*	Brooklyn	1853	
Peck, W. L	Columbus	1853	
Potter, J. F*	Cincinnati	1854	1868
Preston, J. C	Brunswick	1857	
Pomerine, Joel	Millersburg	1858	
Pearce, Enoch, Jr	Steubenville	1859	
Patterson, A. V	Mansfield	1861	
Potter, Amos	New Madison	1863	
Pease, L. T	Williamsburg	1863	
Pullen, G. W	Logan	1864	
Paige, W. F	Johnstown	1864	
Phillips, H. W	Kenton	1866	
Pearce, H. C	Urbana	1867	
Pomeroy, O	Chardon	1869	
Pratt, E. B	Mount Sterling	1869	
Pearce, L. E	Cable	1869	
Pomerene, P. P	Berlin	1870	
Perrin, J	Cleveland	1870	
Pixley, Sumner	Peninsula	1870	
Palmer, C. D	Cincinnati	1871	
Peck, W. V	New Richmond	1872	
Primrose, J. P	Nelsonville	1872	
Riggs, John U	Bryan	1873	
Reed, N. C	Columbus	1873	

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Reed, C. H.	Toledo	1873	
Russell, J. W.	Mount Vernon	1848	
Risinger, J. F.*	Galion	1849	1866
Robertson, Charles	McConnellsville	1849	
Rives, L. C*	Cincinnati	1850	1870
Reeves, W. H.	Springfield	1849	
Rogers, Robert	Springfield	1847	
Rodman, Thomas S.*	Cleveland	1852	
Robertson, James*	Perrysburg	1853	1854
Rigdon, L.*	Hamilton	1853	1865
Rives, Landon	Cincinnati	1853	
Rogers, J. G.	New Richmond	1853	
Rusk, Daniel	Malta	1855	
Reamy, T. A.	Zanesville	1855	
Robinson, J. D.	Wooster	1856	
Robinson, J. N.	Medina	1856	
Robb, Andrew	Blanchester	1859	
Rodgers, J. H.	Springfield	1859	
Raymond, B.	Carroll	1860	
Rathbun, C.	Salem	1860	
Reeve, J. C.	Dayton	1861	
Reid, J. T.*	Fairfield	1863	1864
Ralston, D. H.	Granville	1864	
Reed, C. R.	Middleport	1864	
Reed, William	Iberia	1865	
Reed, R. C. S.	Glendale	1867	
Richie, J. A.	Ontario	1867	
Rice, J. B.	Fremont	1868	
Ropp, W. P.	Delaware	1869	
Roots, W. Y.	Milford Center	1869	
Rankin, A. H.	Sandusky	1870	
Ridenour, W. T.	Toledo	1870	
Russell, I. W.	Mount Vernon	1870	
Reed, A. N.	Norwalk	1870	
Reed, A. B.	Brooklyn Village	1870	
Randall, R.	Bath	1870	
Rosenfeldt, A.	Cincinnati	1871	
Smith, C. T.	Middleport	1873	
Spencer, B. T.	Newark	1873	
Sparrow, T. R.	Columbus	1873	
Seeds, R. Z.	Hilliard	1873	
Stein, Geo. T.	Columbus	1873	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Smith, J. H.	Delaware	1873	
Shepherd, W. E. W.	Nelsonville	1873	
Skinner, J. S.*	Columbus	1849	
Sachse, G. J.*	Columbus	1846	1860
Smith, S. M.	Columbus	1846	
Smith, James	Elkhorn	1850	
Smith, Edmond*		1850	1850
Seldon, O. G.	Shanesville	1851	
Silver, D. H*	Columbus	1851	1864
Stanton, Benjamin*	Salem	1852	1861
Story, R.*	Cleveland	1852	1866
Smith, A. C*	Medina	1852	1861
Shotwell, John T.*	Cincinnati	1850	1850
Sanders, Moses*	Norwalk	1853	
Shaedford, R. J.*	Medway	1853	1868
Sharp, W. T.	Middleburg	1853	
Smith, J. A.*	Piqua	1853	1853
Stevens, E. B.	Cincinnati	1853	
Spillman, Henry*	Medina	1855	1862
Scarf, W. D.	Bellefontaine	1855	
Scott, W. J.	Cleveland	1855	
Sheppard, W. A.	New Vienna	1856	
Sinnet, E.	Granville	1850	
Snodgrass, J. M.	Ostrander	1850	
Stevenson, A. G.	Richmond	1856	
Stilwell, Thomas	Fremont	1857	
Shively, J. W.	Massillon	1858	
Schurtzer, J. V.	Massillon	1858	
Schwab, Louis.	Portsmouth	1872	
Salisbury, J. N.	Russelville	1872	
Sweney, R. L.	Marion	1859	
Scoville, S. S.	Lebanon	1859	
Sharpe, E. C.*	Williamsburg	1859	1868
Southard, J. M.	Marysville	1860	
Stephenson, J. H.	Leesville	1860	
Spees, S. J.	Hillsboro	1863	
Smith, J. W.	Wellington	1863	
Stamp, Jacob	Mount Vernon	1866	
Sprague, James	Vienna X Roads	1866	
Stansell, J. A.	Forest	1866	
Sellers, A.	Lebanon	1867	
Stockstill, J. W.	New Carlisle	1867	

*Deceased

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Stewart, J. W	Dayton	1868	
Shouse, B. A	Antioch	1868	
Shields, T. P	Watkins	1868	
Seaton, A. M	Midway	1869	
Schueller, J B	Columbus	1869	
Steeley, H. G	Sidney	1869	
Smith, Harry	Mount Vernon	1869	
Steward, S. H	Columbus	1869	
Shoemaker, J. W	Napoleon	1869	
Silver, J. G	St. Louis	1869	
Stanley, E.	Sandusky	1870	
Scott, A. J	Loudonville	1870	
Sykes, W. H	Plymouth	1870	
Speece, N. V	Quincy	1870	
Sherman, A M	Kent	1870	
Silver, D. R	Applecreek	1870	
Selden, Robert	Shanesville	1870	
Smith, D. B	Cleveland	1870	
Stark, W	Cincinnati	1871	
Seely, W. W	Cincinnati	1871	
Shackelton, E. L	St. Marys	1871	
Sensamen, H	Tremont	1871	
Snyder, D. J	Scio	1871	
Stanton, Byron	Cincinnati	1871	
Shepherd, W. W	Hillsboro	1871	
Sayler, William	Gratis	1871	
Tagert, E. Curtis	Hilliard	1871	
Thorn, S. S.	Toledo	1873	
Taylor, James L	Wheelersburg	1872	
Thompson, John B	Columbus	1846	
Thompson, M.*	Mount Vernon	1850	1867
Thompson, Robert*	Columbus	1846	1865
Tilden, D. J.*	Toledo	1850	
Tullis, J. W.*	Troy	1851	
Tappan, Benjamin*	Steubenville	1852	
Thompson, J. C	South Bloomfield	1848	
Tipton, R. H	Darbyville	1853	
Treon, John	Miamisburg	1853	
Taliaferro, William T*	Cincinnati	1854	1871
Tilden, Daniel*	Sandusky	1856	1870
Turney, S. D	Circleville	1856	
Taggart, T. M*	Dalton	1857	1867

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Thomas, K. G.*	Alliance	1858	1869
Thompson, J. W.*	Columbus	1860	1862
Thompson, A. W.	Circleville	1862	
Thompson, W. R.	Montgomery County	1871	
Turnbull, John	Xenia	1863	
Turney, Joseph	Nevada	1864	
Thorn, E.	Yellow Springs	1867	
Thurston, R. C.	Oxford	1868	
Todd, Joseph	Shreve	1868	
Tichenor, E. J.	Lebanon	1869	
Terry, C. A.	Cleveland	1870	
Titus, A	Wheelersburg	1871	
Underwood, A. H.	London	1869	
Underwood, W. J.	Akron	1869	
Voohrees, S. R	Mason	1873	
Vattier, J. L.	Cincinnati	1850	
Van Pearse, James*	Columbus	1850	
Van Tuyl, D. R.*	South Bend	1850	
Van Tuyl, H.*	Dayton	1853	
Vanatta, E.	Fultonham	1855	
Vandervort, J. W.	Harveysburg	1864	
Vaughters, Thomas G.	Portsmouth	1872	
Wilson, J. F.	New Holland	1873	
Waddick, J. M.	Toledo	1873	
Welsh, J. W.	Deersville	1873	
Wolfley, W. J.	Columbus	1873	
White, John*		1848	
Wilson, J. L.	Greenfield		
Wright, M. B.	Cincinnati	1852	
Woodward, Charles	Cincinnati	1851	
Woodward, Warren	Cincinnati	1871	
Williams, A. S.	Fostoria	1852	
Wood, D. B.	Cincinnati	1852	
Woods, John R.	Warren	1871	
Wilson, Samuel	Wooster	1854	
Wilson, Albert	Sidney	1854	
Wade, D. E.	Cincinnati	1854	
Williams, E.	Cincinnati	1856	
Weber, G. C. E	Cleveland	1857	
Wilson, W. F.	Ironton	1856	
Welsh, B. F.	London	1859	
Wright, T. L.	Bellefontaine	1860	

*Deceased.

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NAME.	POST-OFFICE ADDRESS.	ADMITTED.	DIED.
Weeks, G. R.	Bloomfield	1860	
Williams, T. B.	Delaware	1860	
Wallace, R.*	Lewisburg	1861	1865
Wigton, A. E.*	Delaware	1861	1862
Woods, J. T.	Findlay	1862	
Woody, Robert	Eaton	1863	
Wilson, W. H.	Greenfield	1865	
Weatherby, A. S.	Cardington	1865	
Weaver, J. M.	Wooster	1865	
Wirth, R.	Columbus.	1865	
Woodworth, M. C.	Warren	1866	
White, J. H.	Delaware	1866	
Wylie, A. N.	Ripley	1866	
Woodruff, L.	Alton	1867	
Willis, P. A.	Bellepoint	1868	
Waterman, H. C.	Middleport.	1868	
Williams, D. S.	West Independence	1868	
Willis, T. A.	Bellepoint	1868	
Williams, A. D.	Cincinnati	1868	
Wheaton, J. M.	Columbus.	1869	
Wagenhals, P. M.	Lancaster	1869	
Wiggins, C. W.	Big Plain	1869	
Watt, William	Kenton	1870	
Whiting, L. M.	Canton	1870	
Woodbridge, T.	Youngstown	1870	
Weed, Frank J.	Cleveland	1870	
Waggoner, Joseph	Ravenna	1870	
Wallace, J. H.	Canaan	1870	
Warren, Guy	Garrettsville	1870	
Whittaker, J. T.	Cincinnati	1871	
Worthington, A. T. C.	Middletown	1871	
Warren, J. A.	Wheelersburg	1872	
Wilson, C. M.	Miami Springs	1872	
Wilson, D. C	Ironton.	1872	
Wylie, J. L.	Ripley	1872	
Westbrook, A. E.	Ashley	1872	
Williams, A. Lee	Lewisburg	1871	
Whitehead, —	Springfield	1873	

*Deceased.

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HONORARY MEMBERS.

Professor H. H. Childs, Pittsfield, Massachusetts.
" Charles A. Lee.*
" William Tully,* New Haven, Connecticut.
" J. Knight, New Haven, Connecticut.
G. B. Guthrie, M. D., New York City.
M. J. Bailey, M. D., New York City.
R. R. McIlvaine, M. D., New York City.
Professor Willard Parker, New York.
J. H. Brower, M. D., Lawrenceburg, Indiana.
M. M. Harding, M. D., Indiana.
George Sutton, M. D., Indiana.
J. C. Blackburn, M. D., Covington, Kentucky.
J. L. Hayes, M. D., Philadelphia, Pennsylvania.
Professor R. D. Mussey,* Cincinnati, Ohio.
R. E. Houghton, M. D., Richmond, Indiana.
Robert Thompson,* M. D., Columbus, Ohio.
G. W. Boerstler,* M. D., Lancaster, Ohio.
W. B. Lyons, M. D., Huntington, Indiana.
J. M. Stevenson, M. D., Pennsylvania.
J. M. Kitchen, M. D. Indianapolis, Indiana.
S. P. Hunt, M. D., Sterling, Illinois.
G. S. B. Hempstead, M. D.
H. K. Steele, M. D., Denver, Colorado.
P. Beeman, M. D., Iola, Kansas.
Dr. Awl, Columbus.

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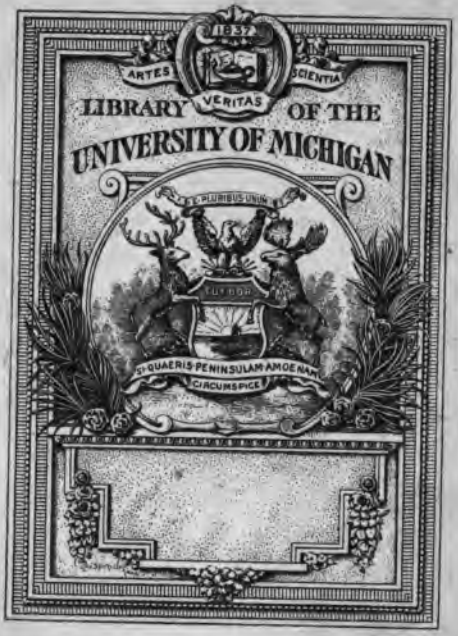

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